

# American Artisan

THE WARM AIR HEATING  
AND SHEET METAL JOURNAL  
FOUNDED 1880



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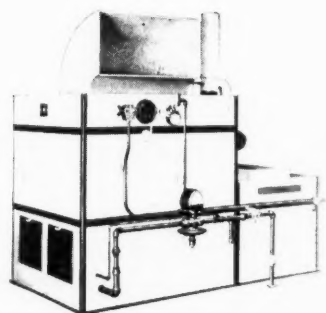
## ANACONDA COPPER

OCTOBER 26, 1931

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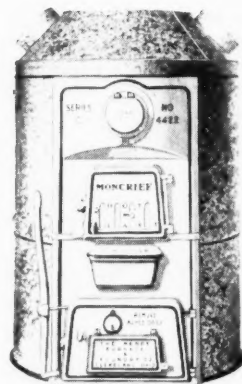


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AIR CONDITIONER

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**N**O NEED to let competition push you. Instead, you can beat competition at every point when you handle the extensive Moncrief line. Every furnace is of most approved design, substantially made of quality materials, affording big value. You can make money on the Moncrief line. Write for particulars.

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October

SERIES



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# True Talks

with successful sheet metal men

SERIES No. 1

NUMBER 8



M. J. Cutter, President, Cutter Sheet Metal Manufacturing Co., never passes up a chance to sell Monel Metal equipment when he feels there is a need for it.

When M. J. Cutter of Cleveland, Ohio, started his own sheet metal business in 1922, his assets were 24 years' experience in this highly competitive field and an indomitable determination to win. Today the Cutter Sheet Metal Manufacturing Company, Inc., is rated at \$75,000, has a large, repeat-order trade and is stepping along at a steady clip!

The combination of skill, service and



Modern, well-equipped shop of the Cutter Sheet Metal Manufacturing Co., Cleveland, Ohio.

salesmanship that explains this enviable record of growth is reflected in a modern, well-equipped plant, specially designed to handle everything in sheet metal up to 10

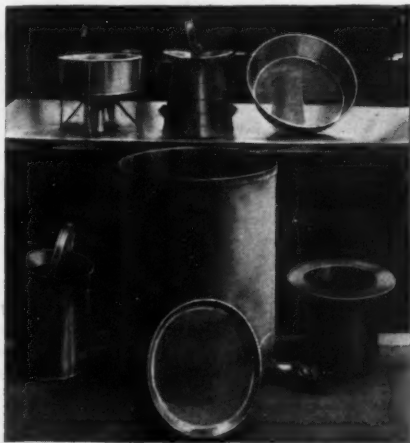
## MONEL METAL JOBS HELP CUTTER BUILD \$75,000 BUSINESS

gauge material. The company keeps about 15 men busy making equipment for a wide variety of industries, including equipment for paint and varnish manufacture, air conditioning, food service, heating and conveyor systems... to mention only a few.

In company with other live-wire sheet



Monel Metal drain boards, splashback and shelves for glass washer in Clover Coffee Shoppe, Cleveland.



Paint manufacturing accessories made of Monel Metal, including barrel funnel, measures, sieves, paint strainer and 50-gal. paint barrel.

metal contractors, the Cutter organization is an enthusiastic user of Monel Metal. Wherever they find a need for equipment requiring Monel Metal's rust-immunity, corrosion-resistance, cleanability and steel-

like strength, Cutter engineers specify this bright, durable Nickel alloy. The illustrations shown here bear witness to the scope and quality of the Monel Metal jobs this progressive firm turns out.

Mr. Cutter cites sieves for paint and varnish plants to illustrate why his company is such a strong advocate of Monel Metal equipment. He has found that Monel Metal sieves last *four times as long* as ordinary sieves because they keep bright indefinitely and withstand scraping without stretching or sagging. Such performance, Mr. Cutter says, accounts for the rapidly increasing popularity of Monel Metal equipment among his customers and has played a vital part in building profitable business and good-will for the company.

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

A HIGH NICKEL ALLOY

# MONEL METAL

NICKEL ALLOYS PERFORM BETTER LONGER



THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

INDEX PAGES—4 and 48

[VOL. 100, No. 22]

BUYERS' DIRECTORY—44 and 46

Founded 1880

# American Artisan

THE WARM AIR HEATING  
AND SHEET METAL JOURNALCovering All Activities  
INGravity Warm Air Heating  
Forced Warm Air Heating  
Sheet Metal Contracting  
Air Conditioning  
Industrial Roofing  
Merchandising  
Ventilating

We have enjoyed co-operating with Platte Overton in the preparation of the articles he has been writing. We hope you readers have enjoyed reading them and that you have derived benefit from them. We would like to use his pages as a sort of forum in which your engineering questions and problems might be threshed out. If you like this idea, tell us what you want to see discussed.

\* \* \*

Margaret Ingels is one of the best heating engineers in the country. Lately she has been telling gatherings of women all about air conditioning. Naturally her terminology has had to be easy to understand. We publish an article of hers in this issue. You will enjoy reading it.

\* \* \*

If business is slack in your town you are probably wondering if there isn't some specialty you can make and sell. There's an article on just such an item in this issue.

Member of the Audit Bureau of Circulations

VOL. 100, NO. 22

OCTOBER 26, 1931

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JOSEPH D. WILDER  
Editor

Published Every Other Monday

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PORTER-SPOFFORD-LANGTRY CORPORATION

139 North Clark Street, Chicago—Telephone Central 7670

Fred D. Porter, President

John C. Langtry, Vice-President

Howard H. Bede, Secretary

Circulation Manager: John R. Hannon Business Manager, Etta Cohn Advertising Representatives: Charles E. Kennedy

New York Office: 295 Madison Avenue, Room 1109, Tel. Ashland 4-5342—L. R. Hudson, Eastern Representative

Yearly Subscription Price—In United States, \$2.00; Canada (including duty), \$4.30; Foreign, \$4.00; Single Copies, \$.25



## At last: OUT OF THE WOODS!

IT was a long hard struggle for the old mousetrap maker.

It seemed to him that he would never see the last of those woods—that he would never come across another town in which to sell his mousetraps. But he kept plowing straight ahead, firm in his conviction that the woods would end sometime—

—and here you see him, out of the woods at last!

Give him a minute to shave off his beard and patch his clothing and he will be all set and ready to do business again.

There's a moral in this for all of us. Right now we are in the dark woods of the depression. It seems that business will never get better. But every woods has its ending—and this applies to depressions too. One of these mornings we will wake up to the sight of better business ahead—and then will begin a new era of prosperity.

**BUT THERE'S GOING TO BE A DIFFERENCE WHEN BUSINESS DOES GET BETTER!**

Back in the old days people didn't care a great deal about the furnace you installed—just as long as it was a furnace. During these trying days, however, they are asking questions about your furnace, comparing it with other makes. Money is hard to get, and when a person spends two or three hundred dollars for a furnace, they make mighty sure they get their money's worth.

This habit of not taking anyone's word for your furnace is going to be a habit long after the depression ends. Therefore if you expect to make the most of the brighter days ahead, you'd best begin thinking NOW about a furnace that LOOKS AND IS QUALITY, a furnace that takes off its hat to none.

# PREMIER

WARM AIR HEATER CO.

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Naturally we nominate Premiers as this furnace which you need now and will continue to need. But we don't want you to take only our word for it. Instead we want you to write to Premier Dealers themselves and ask them what they think of Premiers. We will gladly give you the name and address of the Premier Dealer nearest you.

Asking the man who is actually selling them is the acid test of any furnace. We ask you to make this acid test of Premiers.

Whoever you are and wherever you may be, if you want to make the most of the bright days ahead, we'd like to show you how we can help you. Where there's a will there's a way. If you have the will, we have the way. Let's hear from you.

PREMIER of DOWAGIAC:

All right Premier. Let's have your story. By mail ☐ By Salesman ☐

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Address.....

City.....

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Mention AMERICAN ARTISAN in your reply—Thank you!



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**SAVE MONEY**

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*Manufacturers of Furnace and Boiler Repairs  
and Gray Iron Castings*

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The Wise **BALANCED** Line

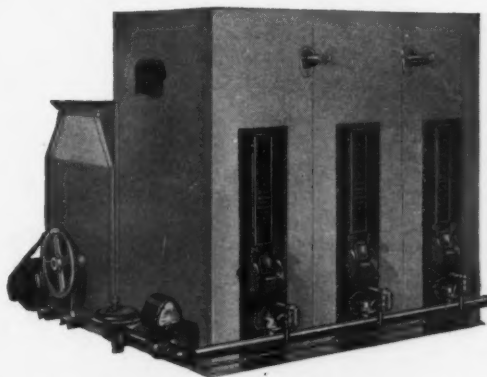
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Constantly keeping abreast of your needs "AFCO" and "THERMO" Furnaces have been improved and new furnaces designed for the exacting requirements of the new fuels and the enlarged market for warm-air heating.

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SAVE WITH STEEL

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**ABLE SERVANT OF THE CENTRAL WEST**  
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Rails Track Accessories  
Bands Rivets Billets

Say you saw it in *AMERICAN ARTISAN*—Thank you!

## More Competition This Winter

**M**OST persons are agreed that even though business shows a seasonal pickup around the end of the year, the winter ahead as a whole is going to be a tough one.

Tens of thousands of wage and salary earners are going to be out of work. Professional and business men will feel the pinch of hard times through slow collections and difficulty in selling commodities or services.

Contractors have been hoping all year that governmental stimulus might lead organizations with money to launch a building program. Although July of this year did show a pickup of five per cent over June of this year, both months showed better than 30 per cent decrease over the same months of 1930.

So far as large construction projects are concerned, the winter ahead looks like a slim season for sheet metal, ventilating and heating contractors.

We will have, however, some increase in residential furnace work. There are thousands of old furnaces which may breathe their last this winter in spite of the home owner's nursing. There will unquestionably be some warm air replacement work and perhaps some furnaces replacing steam and water plants where home owners want air conditioning and have the money to pay for it.

There probably will, then, be an increase in the tendency noticed this past summer—sheet metal and ventilating contractors who stepped out of furnace work years ago returning to the warm air heating field. There will also be growing competition in the small heating plant field from sales specialty organizations who have been handling radios, cleaners, refrigerators, and who now see a good field for the sale of automatic heating systems, of gas, oil or stoked coal.

So far as the former ventilating and sheet metal contractor is concerned, his competition in many communities will be welcomed. His sales force, his ability to advertise, his contact with architects, his willingness to tackle the largest job will do much to lead warm air heating into new sales fields. So far as ability to do good work and design correctly are concerned, this contractor will undoubtedly secure good engineering to handle his design and retain the best mechanics to do his installation.

But from the specialty sales organization, we may

expect somewhat different competition. First of all this type of operator is primarily a high pressure sales organization. The men on the payroll are salesmen, accustomed to intense competition and able and willing to call into play every sales tool and trick. Generally speaking, our contractors are not used to this type of competition.

What such organizations will do for engineering and mechanical brains, is open to guess. Probably the manufacturer whose product they contract for will furnish the engineering or advise them where to get it. But the mechanical knowledge will be more difficult. Of course they can hire mechanics by the trainload, but how to keep a force busy, out of mischief and an asset rather than a liability will be the difficulty.

The problem of the sales organization will be how to design and how to install. The problem of the established warm air heating contractor will be how to sell. The group which reaches its goal first will be the group which will dominate the field of air conditioning which is just now coming into American life.

This winter should be a good time for the heating contractor to see just how much of a sales organizer he is. There are hundreds of salesmen out of work in every city. They have been selling all sorts of doodads on commission this past year. Many of them would welcome a chance to canvass for furnace cleaning, repair, automatic controls, humidification or any other specialty if the field could be proved, or better yet, paid a small salary once they demonstrated ability to make headway in heating.

We know of several contractors who have entered the field of intensive selling. These contractors have hired canvassers, schooled them in what to say and what to talk about, given them a specialty to use as an entering wedge to get the home owner interested and started them out from door to door. The results have been better than expected. True, the turnover is too high, but this has not proved a serious hindrance.

The winter will also be a good time for the contractor to test out his own sales ability, for the man who can sell this winter need not fear for the future.

The point to be kept in mind is that more competition, not less competition, will be the order of the day. The man who prepares for it will come through in good shape.



# Copper Protection Special Design



The front of the building is ornamented by a copper clad tower and copper covered dormers let through the slate mansard roof. Details of the metal fabrication are related in the text

ing. The tower begins at the base of the wall and continues as a brick tower to a point just above the roof line. Here it is topped off with stone and brick ornamentation forming a parapet around a flat deck on which stands the ornamental top which is sheathed in copper.

The base of the tower is eight sided with the four compass point sides longer than the remaining

**T**HE Joseph Romberger Company, sheet metal contractors of Milwaukee, Wisconsin, is one organization which has found some work to do despite the general let-down in contracting work over the country. During this past winter, spring and summer the company has completed several contracts, which although not as large in amount of metal used as some of the jobs completed in past years, have kept the organization busy.

Quite a volume of work done this year has come from local church organizations. This work has been secured through contact with persons in charge of construction for these organizations, through architects co-operating with such organizations and through general contractors, also doing work for these denominations.

One of the contracts completed this summer used some 15,000 pounds of copper to sheath an ornamental tower, roof and side dormers and provide copper flashings, fire doors and water proofing sections on a Catholic boarding school

building on the outskirts of Milwaukee.

While the amount of metal used is not as large as on some of the jobs the Romberger company completed in past years, there are, nevertheless, a number of interesting features to the fabrication and erection of the copper on the tower, dormers, and around the roof.

The most interesting feature is the ornamental tower. This tower occupies a central position on the front elevation of the main build-



Ventilation is by means of rotary copper gravity ventilators

four which are really cut-off corners. The photographs showing the tower were taken before the copper work was completed and so do not show the copper screened and louvered panels which fill the open spaces of the base.

One of the interesting details is this copper clad explosion door. All the copper work was fabricated by the Romberger company, including the doors. All seams are soldered





# and Ornamentation of Used on a Milwaukee School

The frame around these louvers are paneled columns held on wood backup. The entire column face was fabricated and soldered as one unit in the shop and delivered to the roof ready to fasten to the backup. The ornamentation of these panels is rather plain and consists of a small pressed frame at the top and long narrow raised sides. The outside edges were left wide so the panels could be nailed through these edges.

Between the panels there is an ornamental frame, such as shown, set up against the cornice. These panels are built of eight pieces which were fabricated and soldered along the back in the shop. Extra edges were left for nailing and



There are some 74 squares of slate in the Romberger contract. This view shows one of the wings, of which there are two. The operating units on top of the roof are all copper clad

after being placed in position between the panels the edges are sol-

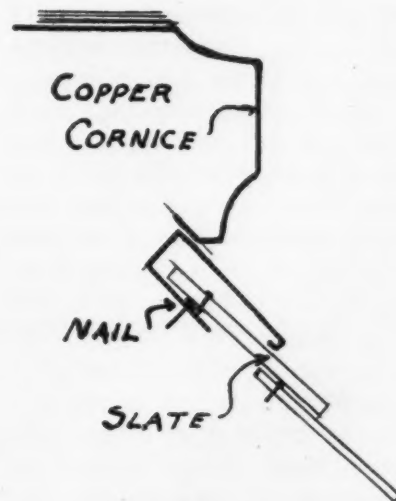
dered to the other copper sections.

The copper screened louvers fit between the columns below these panels.

Around the base of the tower

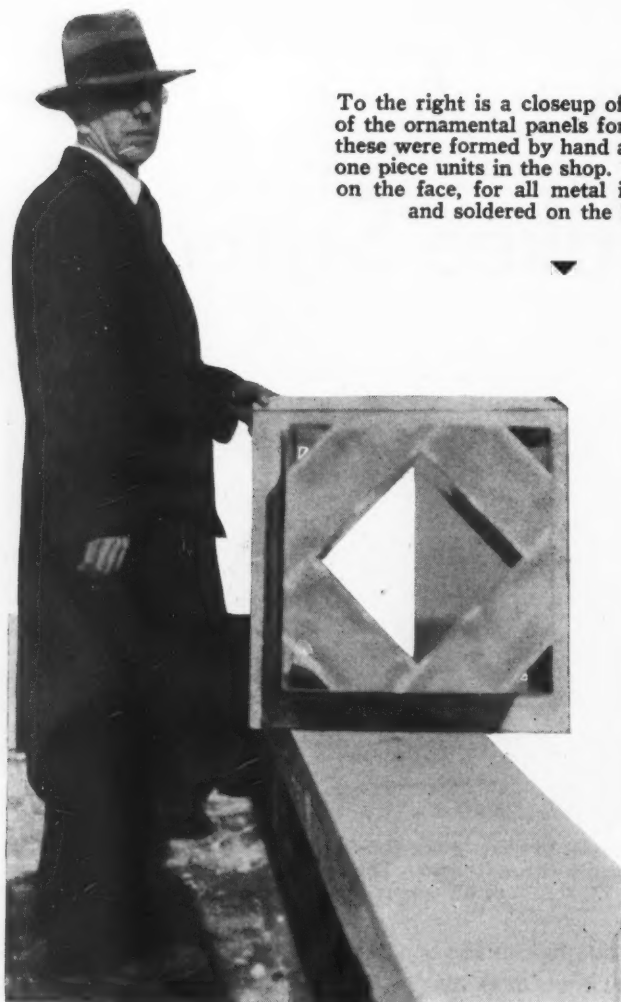


This closeup of the tower shows how the sections were fabricated as units ready for erection. Special copper screen louvers fill the panels below the two-square ornaments. Note the chevron ornamentation in the two tower roofs. The sheets are self capping

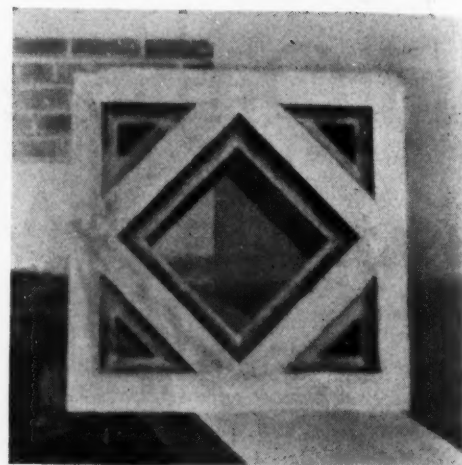


Precautionary measures were specified to forestall deterioration. This shows the copper ridge cornice and flashing over the slate

roof there is a plain, two-step cornice fabricated in sections the same length as the sides of the tower and soldered together on the job. There



To the right is a closeup of the face of one of the ornamental panels for the tower. All these were formed by hand and soldered into one piece units in the shop. No seams show on the face, for all metal is turned behind and soldered on the back side



George Romberger, one of the brothers of the firm, is shown holding one of the ornamental panels with the back side to the camera. Note that the back side is closed by flat sections tightly soldered

At the top of this section of the roof there is a narrow band forming a shallow cornice and the base for the top part of the roof. This band was also fabricated in the shop in sections equal in length to the roof sections below.

The top of the roof is a convex curve ending at the finial. The wide panels corresponding to the wide panels below are also ornamented with a pair of chevrons to a section and again the space between these wide panels are sheathed in three narrow, self capping pan sheets laid between battens.

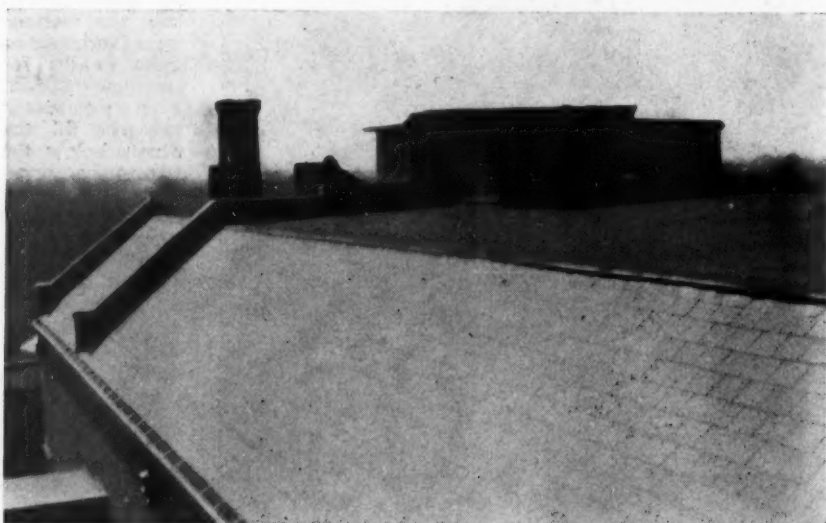
The finial is of copper and was designed and fabricated in the Romberger shop. The top is a cross supported on a turned edge of excellent design and craftsmanship. The Romberger firm has to its credit a number of very excellent

is only a slight projection to this cornice and it is not very high so that the entire contour was formed in one sheet. Connections with the panel work below is by loose locks.

From the cornice up, the roof of the tower sweeps in opposing arcs to the peak. The lower arc of the roof is concave and is laid over wood battens. There is considerable difference in the surface of the various sections of this roof. The roof sections above the four compass sides of the base are ornamented with chevron battens, two to a section as shown in one of the photographs. The purpose of these chevrons is ornamentation and nothing else.

Between each pair of the four wide sections there are three narrow sections laid between battens. These sections are of different widths, there being one wide center sheet and two narrow bordering sheets between each pair of orna-

mented sections. The pan sheets used on this roof are self capping over the battens, each sheet carrying a wide edge turned to form a side and top of the batten cap. The other side forms one batten side. The edges are turned and locked.

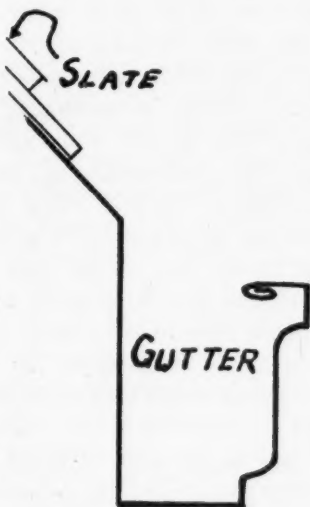


Looking down one of the wings we see the dummy conductor heads fabricated in copper and a length of the special box gutter. All the masonry is flashed in copper

finials on churches around Milwaukee.

The building is in the shape of a square cornered U. The roof on the main building and the two wings is mansard with the two slopes covered with slate and top with a heavy built up roof.

The outside slopes of the roof are all broken with very artistic dormers let through the slope at the gutter line. These dormers are completely sheathed in copper. The roofs are standing seam of a somewhat different style in which the standing seams are stopped several inches above the eave and the sheet which forms the eave cornice is brought up onto the roof and soldered to the roof sheets along the cross seam. The roof sheets are all



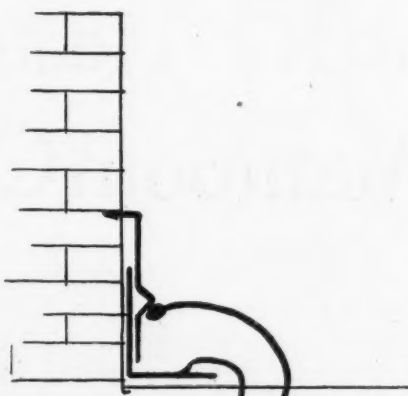
Cross section of a gutter section. These were formed in sections in the shop with the straps riveted in place. The back edge is turned under the slate and clipped

of rather small area to facilitate erection. The ridge and the hips are also standing seam.

Although the photographs do not show this detail clearly, the sides of the dormers are triangular panels with pressed out frame edges. These sides were soldered as a single unit in the shop and delivered on the job ready to nail to the backup.

All the seams on the dormers, both standing and cross locked, were soldered against water.

There are on the roof thirteen



### TWO-PIECE FLASHING

Flashings around roof structures are all two-piece with a crimped edge for stiffening

revolving Swarthout ventilators, most of them of good size. These are used to ventilate laboratories and other rooms throughout the building. No mechanical ventilation is used in the building.

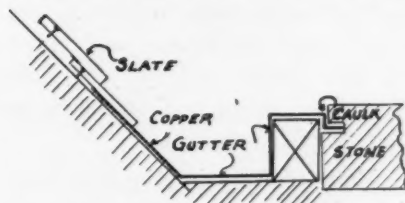
One interesting bit of fabrication work from the Romberger shop is the explosion door over the air shaft connecting with the stage of the auditorium. One of the photographs shows a view of this unit. The sides are all soldered seam copper sheet nailed to a wood framework. Fusible links hold the copper clad doors shut. The roof of this unit has flat locked seams all soldered.

All the ridges of the roof, the valleys and the gutters as well as the flashing around skuttles, ventilators, standpipes, pent houses, etc., are copper protected. The eave sec-

tion is shown in one of the detail drawings and is a single formed sheet placed under the built up roof and down over the flashing sheet over the slate. The gutters are all of the box type and were formed in one sheet. These gutters all drain to inside downspouts although there are false ornamental conductor heads around the top of the brick walls.

Gutters of very plain contour are used around all the pent houses of the roof. These houses are also copper flashed. The gutters are formed in a single copper sheet and are of the depressed center type.

All the copper used on this build-



The main building gutters lie behind stone copings. This shows how the copper lined gutters are caulked into the stone and clipped under the slate

ing is 16-ounce. The slate was included in the Romberger contract and was laid by a special slate crew which handles all this company's slate work.

On the roof there are some 74 squares of slate. The slate used are  $\frac{3}{8}$ -inch of 12 by 20-inch size. The slate are laid on pyrofill gypsum which is in turn supported on the structural frame of the roof.



Several readers have asked if Overton's articles are to be printed in booklet form. Frankly we hadn't considered it, but we will. How many readers would like to see such a book printed?

A post card will do



# This Church Is Heated by the Wall Inlet-Mushroom Outlet System

OF all the various types of buildings heated by warm air, churches have for years offered those intriguing problems in design which make the handling of air so interesting to the heating contractor. It might almost be said that the church has been the proving ground for warm air heating, for in churches some type of forced air was used years before it was popularized for homes, and many of the daring gravity jobs now found in homes find precedent in dozens of old churches.

Many of the principles now used in residence design were developed in churches. For instance, it was in churches that contractors found they must make allowance for high ceilings. And in churches the now controversial placement of inlets

and outlets was tried out many years ago.

So it is only natural that contractors are much interested in church heating. Just how a church should be heated is still a subject for argument. Some contractors favor center inlets and outside outlets, or vice versa. Some contractors favor introducing all the heat at one end and taking out the cooled air at the other. The photographs and the drawing with this article show a church heated by outside inlets and mushroom outlets. The heating system was completed last winter and served for several months of the heating season. The system has functioned to the satisfaction of both congregation and contractor.

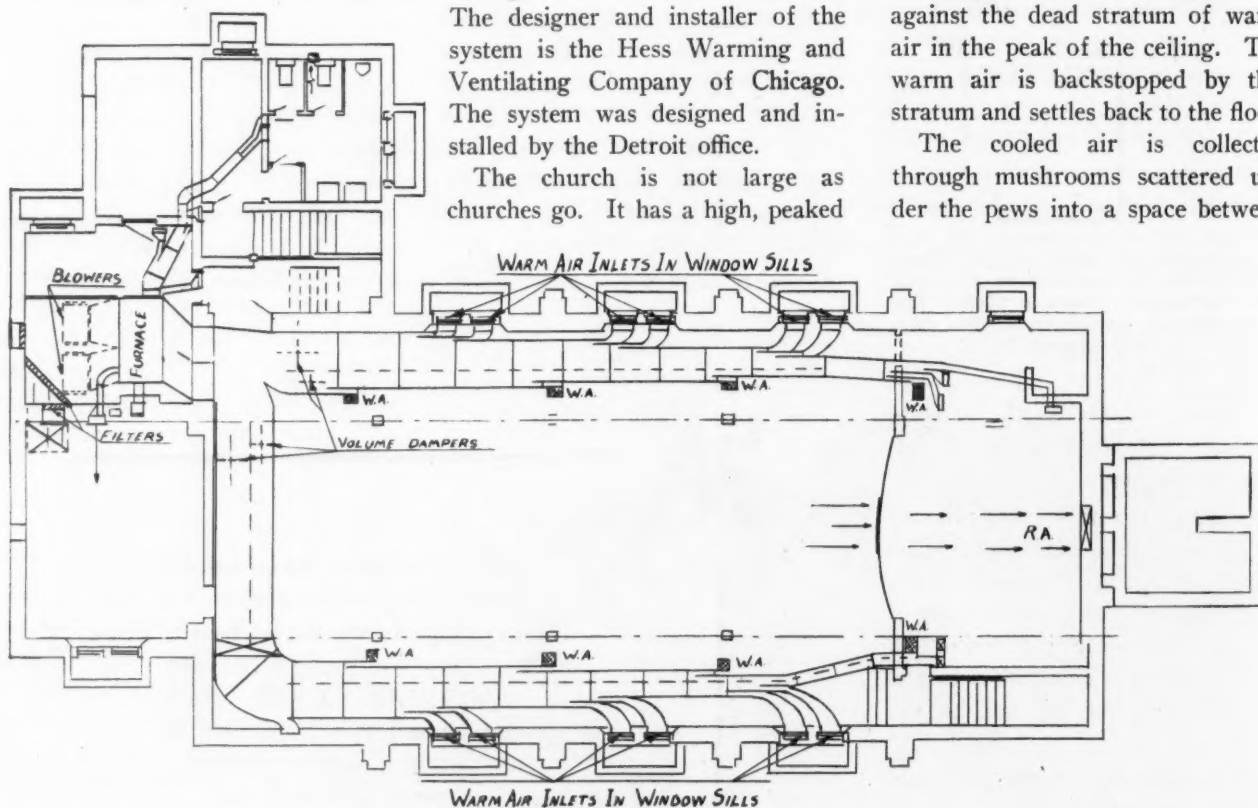
This church is the Bethlehem Evangelical Lutheran of Detroit. The designer and installer of the system is the Hess Warming and Ventilating Company of Chicago. The system was designed and installed by the Detroit office.

The church is not large as churches go. It has a high, peaked

ceiling, a small balcony which is 16 feet above the floor and projects over the auditorium 18 feet. There are several social and work rooms in the basement, all of which are heated. The basement also has one large hall with a full width stage across one end. The heating plant is on the same level with the basement rooms, so the ducts were run across the basement ceilings.

Perhaps the feature of major importance is the method used to supply warm air. On the main floor auditorium all inlets are in the sills of the high windows which line both walls. These inlet grilles are cast and are set in the sloping sill. The grilles connect into splayed ducts, the combination of nearly horizontal grilles and rising ducts projecting the warm air in a broad sheet up the face of the glass and against the dead stratum of warm air in the peak of the ceiling. The warm air is backstopped by this stratum and settles back to the floor.

The cooled air is collected through mushrooms scattered under the pews into a space between



The basement plan shows the duct system and the branches which supply the window sill inlets. Basement registers are set in stubs with each register individually controlled. Return air is through a space between the basement ceiling and main floor





This photograph plainly shows the window sill inlets. Return air is taken down into a space between the floor and basement ceiling through mushroom rooms under pews

the church floor and the basement ceiling. The fan connects into this space. The entrance halls and vestibule are heated by a small duct which supplies five floor registers.

The basement rooms are heated from horizontal registers taken off stubs from the inside of the two main supply ducts. The front of the stage has a large grilled opening through which cooled air is drawn to a riser which opens into the return air space between ceiling and floor. This system eliminated return ducts through the basement.

The plan shows the layout of the ducts and the placement of the apparatus. The large furnace uses coal for fuel and has a grate area of  $5\frac{1}{2}$  square feet. The system is designed to operate at a combustion rate of 10 pounds of coal, but in case of need this rate can be increased to 12 pounds.

The system uses two blowers, each with a maximum capacity of 7,000 c.f.m. at 650 r.p.m. These two blowers are housed in a fan room with plenty of space behind the blowers for filters. The plan shows that both inside and outside air are used. The outside air is brought in through a wall opening with filters on the inside of the

opening. Inside air is brought to the fan room through the duct shown which has a large filter section in its opening and also another large section of filter across the corner where the duct comes through the wall. In all there are ten sections of Reed filters used.

The operation of the blowers is controlled by a bonnet thermostat located in the plenum chamber above the furnace. The blowers go on and off at 220 degrees.

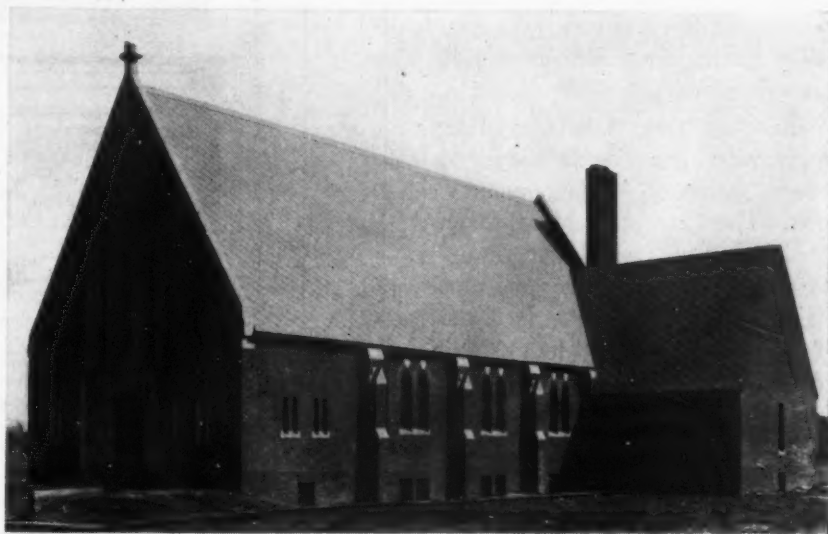
The physical data for the building shows that there is 111,000

cubic feet of interior to be heated. The contract specified an interior temperature of 70 degrees, requiring 467,489 B.t.u. per hour to maintain this temperature. The ten-pound combustion rate should give just over 685,000 B.t.u. at the grate and with a furnace efficiency of 70 per cent the supply would be 479,885 B.t.u. at the registers. The system is designed strictly for forced air and to a register temperature of 130 degrees.

The system is designed and set to give five changes of air per hour while both fans are running. In order to assure this change the blowers must move just under 10,000 cubic feet of air every minute or the total cubical contents of 111,000 cubic feet every 12 minutes.

The ducts are sized to give a velocity in the mains of 800 feet per minute, while the risers and grilles are enlarged to reduce this velocity of 350 feet per minute, which is not objectionable considering the size of the room and the height and location of the grilles. The motors for the blowers are each one H.P.

The ducts and risers are all 24 and 26-gauge iron painted in the basement with one coat of heat-resisting grey enamel. All branches are fitted with dampers and the two mains each have two dampers so that flow can be adjusted or the basement or first floor closed off if heat is not needed.



The church has a steeply pitched roof which is open on the inside. The roof heat loss is large. Window loss is not great

# Metal Window Refrigerators Are Profitable, Odd-time Business Getters

By G. P. HEATH

I HAVE been constantly on the lookout for articles which would provide profitable work for odd times, or could be used as a means of securing other business.

Such an article is to be found in a new type of window refrigerator, which fastens on the outside of a kitchen or pantry window as shown in Figure 1. It provides a safe and sanitary place for keeping milk, butter, meat and other perishable foods in cold weather. It saves ice or electric current, and when conveniently located, is a great saver of steps. If desired, it may be fastened to the railing of the back porch, where it will protect food from dogs, cats, birds, etc.

These refrigerators are very neat in appearance, and supply a real want as testified to by the number of unsightly, unsanitary and unhandy wooden boxes to be seen in great numbers in any city. The novel thing about these window refrigerators is the shutter, which slides up and down at the touch of the finger, and exposes the entire inside of the box to view when raised. No door has to be held open while getting food into or out of the refrigerator.

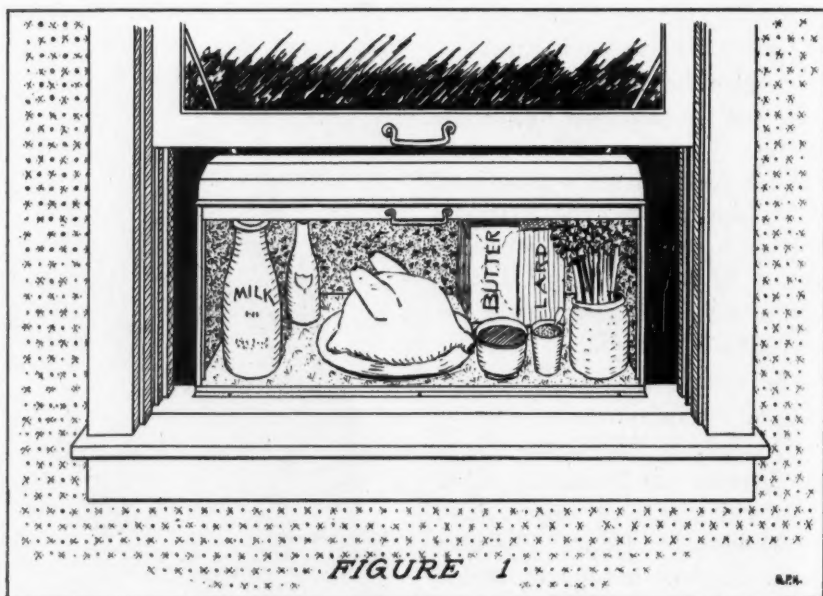
In selling them I have used an agent who goes from house to house, selling on straight commission. They are also sold through hardware, house furnishing and department stores. At the same time the agent can leave literature and secure information which results in the sale of other sheet metal or heating goods. Be sure to have your name stenciled, or a printed label pasted in a conspicuous place, so anyone seeing the box from inside the house can find out where it came from.

Odd-moment specialties which are easy and profitable to sell are always welcomed by the sales-minded sheet metal shop. This article gives the patterns for a window box which is easy to fabricate and easy to sell. G. P. Heath, the author and designer of the box, says his shop has made and sold these for several years. If you are interested in additional details of the fabrication or selling of this item Mr. Heath will be glad to answer questions. Address him in care of AMERICAN ARTISAN

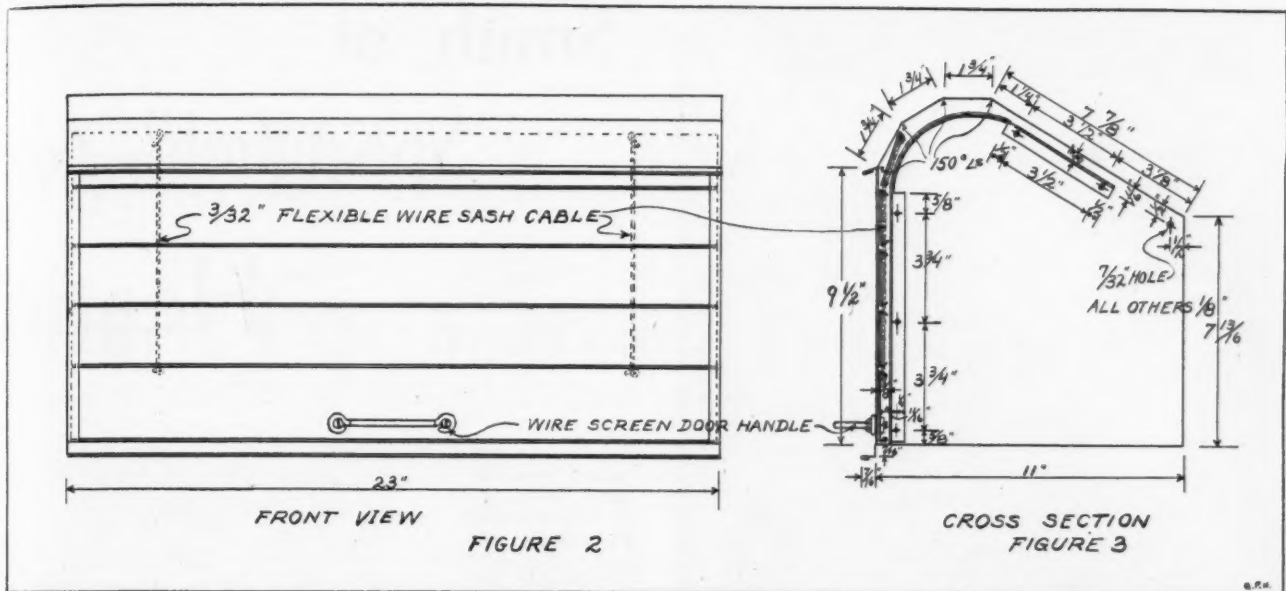
They can be made almost any size, but the one described fits the majority of windows, and pocket books. It holds quart milk bottles nicely, and cuts without much waste from the sheet of iron. I use No. 28 gauge galvanized iron, but black iron painted after completion would make a very fine looking and salable box. The only tools necessary are a square shear, folder, brake, punch or drill and hand tools. A

special plate described below is an advantage.

The body is formed up first, and then the ends are formed and double seamed to it. The guides are then riveted in with No. 1 rivets. The shutter is then made and inserted into the guides from the rear and inside the refrigerator. It is then pulled forward and down, and the handle is bolted on. When bolted on, the handle keeps the



This shows the window box open looking from inside the room. The sliding cover is up. Note the two straps which are nailed to the window frame. The front edge is nailed to the sill



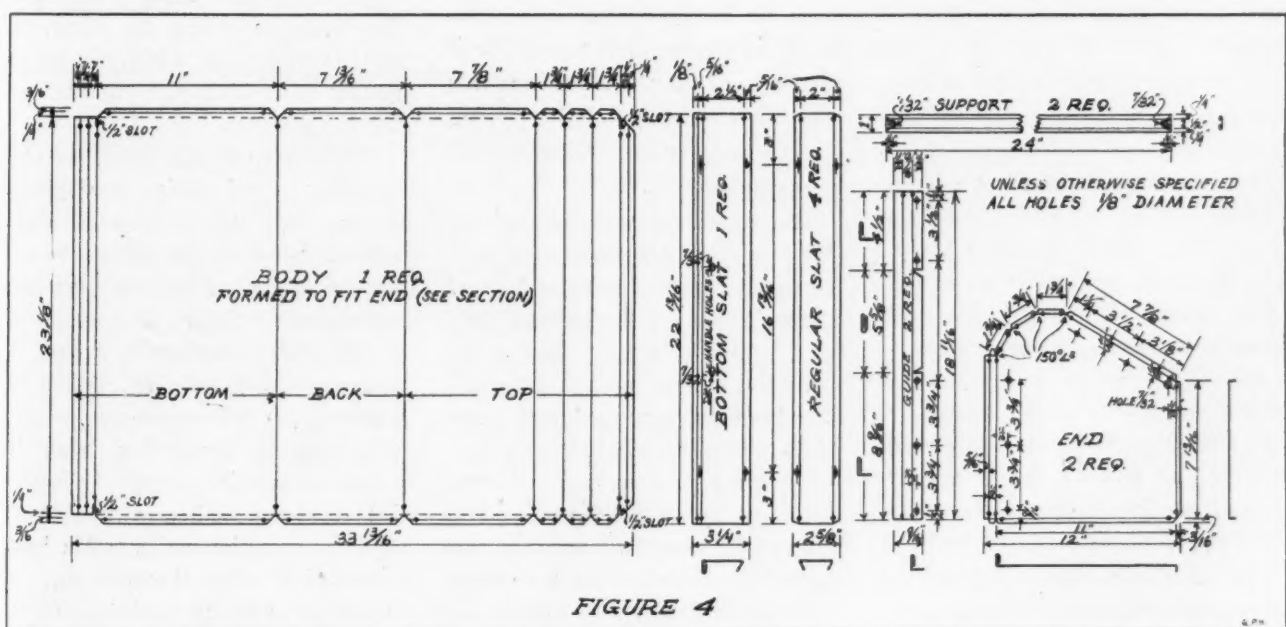
Above is shown the door as it looks from the front and a side view showing how it slides through grooves in the ends

shutter from going up too far and getting out of the guide slots. The handle can be the cheapest type of wire screen door handle.

In making the guides, note that the center section is curved, and to do this the riveting flange is folded against the upright section (see Figure 4). In making the shutter be sure that the  $\frac{1}{8}$ -inch holes in the slats come just at the edge of the bend, as that keeps the slats lined up so they present a flat appearance when assembled.  $\frac{3}{32}$ -inch flexible wire sash cord is used to

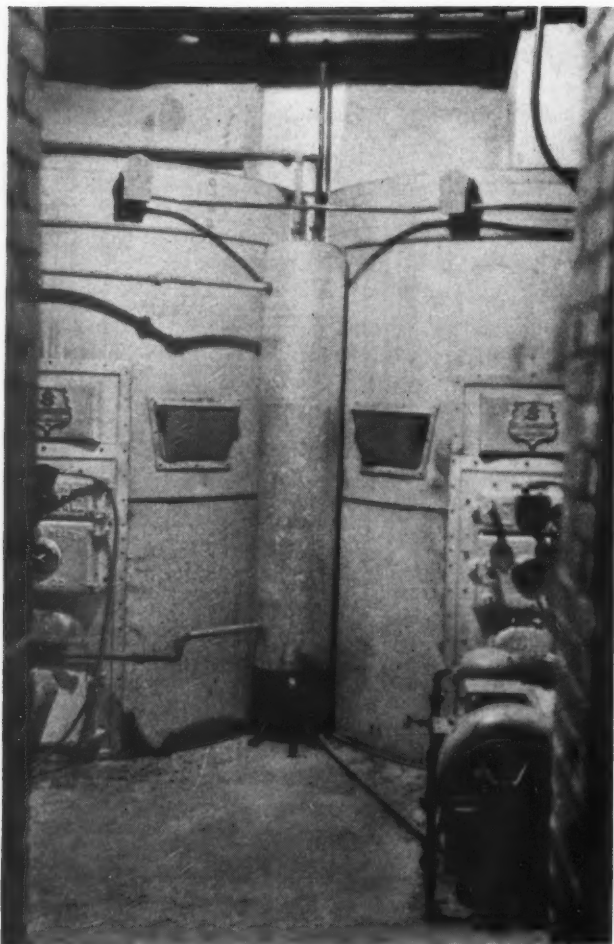
hold the shutter together, it is very pliable, and being galvanized, lasts a long while. It allows the shutter to operate like the top to a roll top desk. One end of the cable is knotted and after being strung through all the slats in the shutter the other end is stretched tight, bent over and held with a spot of solder to the under side of the top slat. In double seaming the ends onto the body of the refrigerator, an iron mandrel the shape of the end is used. It is reversible so one iron does for both ends.

In erecting the box all that is necessary is to nail or screw the front lower edge to the outside of the window sill and then fasten the side supports to the window jamb, outside the sash of course. When the box is thus erected it will hold up a great weight. I always furnish bolts and screws for this. Figure 1 shows box in place, from inside the window. Figure 2 shows the front elevation. Figure 3 shows a cross-section and Figure 4 gives patterns and number of pieces needed.



Here are the patterns for the body of the box and for the end. Two ends should be made, one a right and the other a left. Dimensions for all sections are given





Here are two round pot furnaces, each with its own oil burner. To supply sufficient humidity four water pans had to be placed on each casing. The warm air ducts come off rectangular. Each furnace has one duct of its own, with a third main which feeds the second floor taken off both casings. The fans are enclosed in a small fan room outside the brick wall of the furnace room

## Smith, of Springfield, Mo., Heating

THE plan which accompanies this article shows the heating layout for a small factory in Springfield, Missouri, owned and occupied by the Springfield Tablet and Ticket Company, manufacturers of a varied line of printed forms.

In designing the heating system several widely different conditions had to be met. For instance, there is the warehouse which has a large cubical content, but requires a temperature of only 50 degrees. Above the warehouse there is a second floor space with almost identical floor area, but requiring a temperature of 65 degrees. In addition, there are several small rooms on the first floor, most of them placed at the far end of the warm air runs from the heater room and requiring 72-degree temperature.

In addition to these problems of meeting different temperatures there was also the problem of getting positive circulation to all parts

of the building. The small offices and lavatories presented one angle of this problem and necessitated individual piping runs. The warehouse is entirely open, but most of the time is filled with piles of paper stock or boxes of finished forms ready for shipment. It was required of the contractor that he heat this open area with as small a piping system as possible. What he did shows in the plan.

The contractor who worked out the plan for this interesting system is the Smith Heating and Sheet Metal Works of Springfield, Mo. Mr. Smith is a long time sheet metal and ventilating contractor and has also been connected with some of the southwest's best known public heating contractors. Several years ago he set up for himself in Springfield and has enlarged his operations until he now does large contracts in heating, ventilating and architectural sheet metal all over his part of the country. His shop cus-

tomarily keeps 18 men busy and even during this year has had 12 men most of the time.

The system is designed around well known pieces of equipment. The heaters are number 238 Success furnaces in round casings. Heat is furnished by oil burners with one burner to each furnace. These burners are Williamson gun type industrial size. The system is forced air using two Miles 21C fans with louvres left in place to permit gravity circulation.

In designing the system this matter of gravity circulation was thought important because the fans are controlled by bonnet thermostats which do not turn the fan on until the casing temperature reaches 220 degrees. This high temperature was necessary to heat the building. Because of this high fan temperature there will be much heat inside the casing after the fan shuts off and before it starts which can warm the air in the long pipe runs before the fan goes on.

Practically all the details of the installation and design are shown in the data sheet which is illustrated. Some of the details shown on the sheet and on the plan are worth consideration. For example, in the warehouse the floor area is large, but piled with high stacks of material. It was necessary to circulate the air across this room. It might be mentioned that the building is of flat slab reinforced concrete, a material which holds heat pretty well when warmed up, but which also uses up much heat when cold.

The design uses a two-way rec-



# Designed This System For a Small Factory

tangular duct off one casing and faces the openings toward the far corners of the room. These corners are about 80 feet from the duct face. It can be seen from the plan that using semi-forced air the velocities are probably not more than 300 feet per minute and the air change not more than 4 an hour. The air back to the fan from the warehouse is taken into the fan room through a large steel wall grille located in the wall of the fan room.

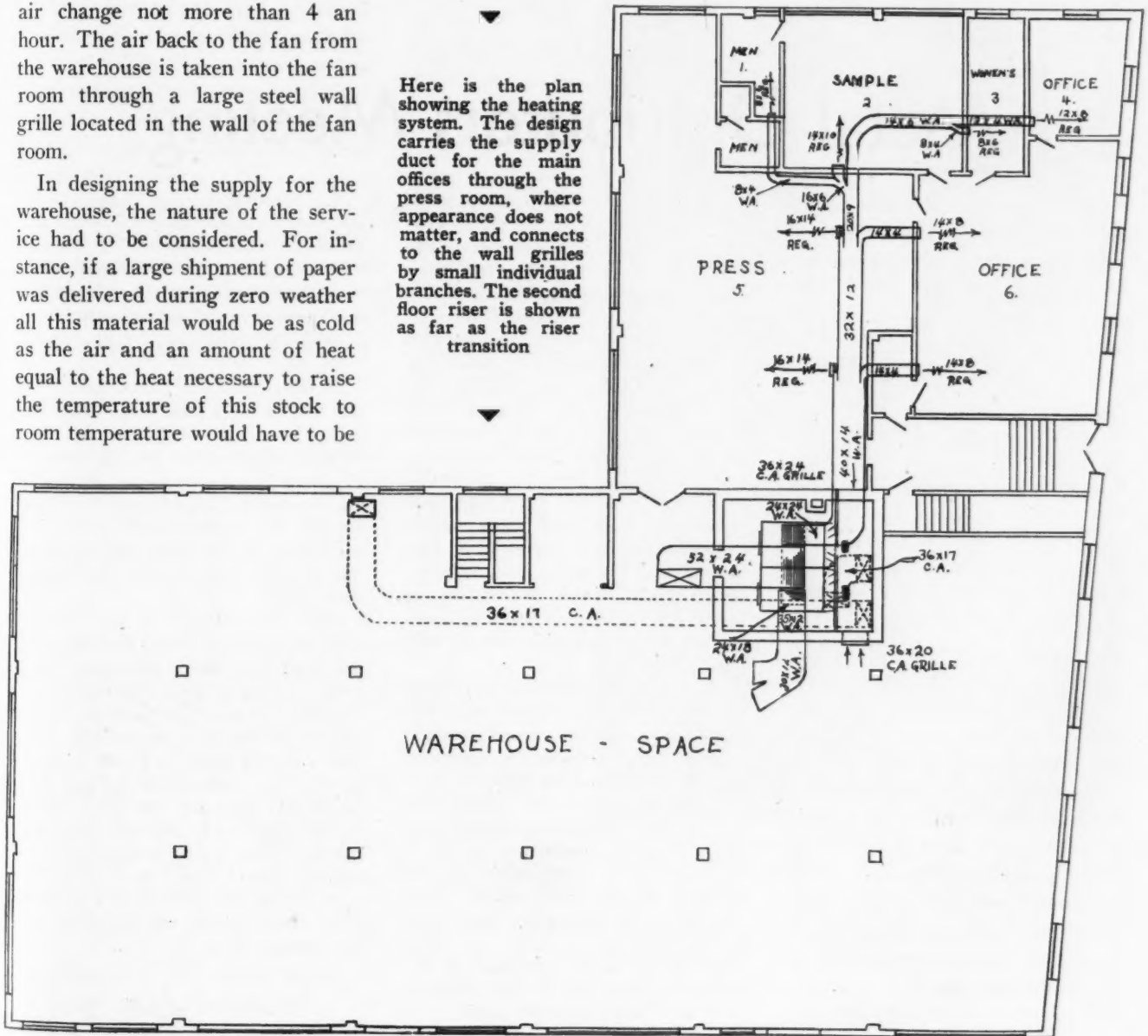
In designing the supply for the warehouse, the nature of the service had to be considered. For instance, if a large shipment of paper was delivered during zero weather all this material would be as cold as the air and an amount of heat equal to the heat necessary to raise the temperature of this stock to room temperature would have to be

supplied before the room would reach its specified temperature.

The space above the warehouse on the second floor is used as storage and manufacturing, toilets and locker rooms. The temperature specified for this floor is 65 de-

grees as shown on the data sheet. All heat to this part of the building is supplied through one large 52 by 24 riser which feeds another duct system. The leader for this riser is taken off both casings as shown.

Here is the plan showing the heating system. The design carries the supply duct for the main offices through the press room, where appearance does not matter, and connects to the wall grilles by small individual branches. The second floor riser is shown as far as the riser transition



DATA SHEET

Factor K - Glass = .1 Floor = .39 Wall = .26 Infiltration = .02 Ceiling = .30

| Room Use   | Floor No. | Dimensions    | Cubic Contents | Net Wall | Net Glass | Floor | Ceiling | Infiltration | Temp. Dif. | Total Btu. Loss |
|------------|-----------|---------------|----------------|----------|-----------|-------|---------|--------------|------------|-----------------|
| Office     | 1         | 12'x11'x10'   | 1375           | 195      | 40        | 138   | 138     | 1375         | 72         | 13752           |
| Office     | 2         | 25'x21'x10'   | 5250           | 230      | 60        | 525   | 525     | 5250         | 72         | 35568           |
| Foyer      | 1         | 8'x24'x10'    | 1920           | 45       | 35        | 192   | 192     | 1920         | 72         | 13248           |
| Press Rm.  | 1         | 34'x32'x10'   | 10880          | 415      | 185       | 1088  | 1088    | 10880        | 72         | 77256           |
| Sample Rm. | 1         | 16'x20'x10'   | 3200           | 160      | 40        | 320   | 320     | 3200         | 72         | 22320           |
| Toilet     | 2         | 6'6"x16'x10'  | 1040           | 50       | 15        | 104   | 104     | 1040         | 72         | 7344            |
| Toilet     | 2         | 6'6"x16'x10'  | 1040           | 50       | 15        | 104   | 104     | 1040         | 72         | 7344            |
| Warehouse  | 1         | 55'x116'x10'  | 63800          | 2170     | 119       | 6380  |         | 63800        | 50         | 195350          |
| Warehouse  | 2         | 55'x116'x10'  | 59600          | 2398     | 1022      |       | 5960    | 59600        | 65         | 313495          |
| Locker     | 1         | 9'6"x9'6"x10' | 903            | 70       | 25        |       | 90      | 903          | 65         | 6045            |
| Locker     | 2         | 9'6"x9'6"x10' | 903            | 70       | 25        |       | 90      | 903          | 65         | 6045            |
| Toilet     | 1         | 9'6"x6'x10'   | 570            | 43       | 17        |       | 57      | 570          | 65         | 3900            |
| Toilet     | 2         | 9'6"x6'x10'   | 570            | 43       | 17        |       | 57      | 570          | 65         | 3900            |
| Totals     |           |               |                |          |           |       |         |              |            | 615577          |

The data sheet shows the problems encountered—wide variation in temperatures, great differences in room sizes and exposures, and the factors used to design the system. The data sheet is unusually complete

The first floor offices and press room are heated to 72 degrees. All these offices are supplied by one

long duct which is suspended from the ceiling. This duct is painted to match the color of the rooms, but

left unpainted in the press room. All the registers off this line are just below the ceiling of the rooms and are equipped with valves so that heat can be shut off if desired.

This part of the building is one story with large window areas. There undoubtedly will be considerable infiltration and exfiltration from this part of the building so the design does not call for any direct withdrawals of air to the fan. The first floor warehouse and the second floor are, however, equipped with three direct ducts to the fan. These show on the plan.

The heating system was completed at the end of last winter, but operated through enough cold weather to demonstrate that it is adequate in heat supply and right in design.

## Metal Distributors Meeting

THE semi-annual meeting of the National Association of Sheet Metal Distributors was held Tuesday, October 20, in Chicago, in conjunction with the annual convention of the National Hardware Association.

The meeting was opened by President F. O. Schoedinger with an address on general conditions in the sheet metal industry and the business field at large.

The president called on W. H. Donlevy to express the association's loss at the death of H. E. Nickerson. Mr. Donlevy stated that Mr. Nickerson's death meant a loss that the association could ill afford.

The meeting offered a standing moment of silence as a tribute to Mr. Nickerson.

The first speaker on the program, J. H. Christman, vice-president and general sales manager of the Milcor Steel Company, Milwaukee, spoke on "Conditions in the Sheet Metal Building Products Industry." Among the points emphasized by Mr. Christman were:

"I believe that opportunities and

possibilities in the distribution of building products made from metal exist right now, and will continue to be bigger and better than they are in any other similar building line.

"Development of new metal specialty products has been coming so fast that there is an ever-increasing number of places for metal on every building job, large or small. The new and better designs of these specialty products make them much more attractive and appropriate. They are acceptable today where a few years ago they would not have been given serious consideration. Their low cost in comparison with other materials provides the fabricators and distributors of metal with a lever to build up more business for themselves through the trade they service.

"The public is beginning to wake up to the possibilities of sheet metal and to better appreciate its importance. This trend is caused by the increasing use of sheet metal in place of other products, and by the tremendous amount of advertising and general publicity the metal building industry is receiving. New uses for metal are given prominence in almost every magazine on the newsstands today. The world's greatest buildings are being sheathed with metal and stand as advertising monuments to the practicality and beauty of sheet metal.

"In addition to the Association's and manufacturers' advertisements, national consumer magazines have many editorial articles about building with metal and about new uses for metal. Such publicity and general interest is helpful, particularly to the aggressive sheet metal contractor group.

"A very important development in the last ten or fifteen years has been the entrance of the lumber man or building supply dealer into the sale of all classes of material as used by building contractors, and in many localities we find this trade classification perhaps alert to the sales opportunities that are offered on products made from sheet metal.

"With the low level of prices in all lines, we can be confident that the next few years will exhibit the usual reaction. As long as human nature retains its capacity to want something better than it has, we may be sure the cautiously-buying public may be aroused by the very evident values now before them. Once the movement starts, we all must soon feel the beneficial effects. There is just as great an unsatisfied demand for better things as ever, and to help satisfy such a demand is of course the big end of the job in any industry."

F. R. Meyer Jr., vice-president  
(Continued on page 28)

# A Coffee Plant Waste Collector

**S**ELLING sheet metal jobs without competition or without having to submit an estimate before the job is let, may sound like a fairy tale, but that is what P. H. Cotton, New Orleans sheet metal contractor, did on the job pictured on this page.

This collector serves a coffee roasting company in New Orleans. Some sort of a collector had been badly needed by the company for years, but the owner was skeptical of the ability of the collector to catch and hold the waste materials. Mr. Cotton says he presented the owner this proposition:

"We pointed out how a collector which would remove and separate objectionable by-products would more than pay for itself through improved working conditions and by insuring a better and cleaner product.

"We agreed verbally to remove all the dust, odors and smoke and also to separate the chaff and other foreign matter 100 per cent. If we did not do this then the installation would not cost the owner one cent."

Mr. Cotton subsequently reports that the system works just as he planned it should and that the owner was so well satisfied that he sent in his check for the installation immediately upon receipt of Mr. Cotton's bill.

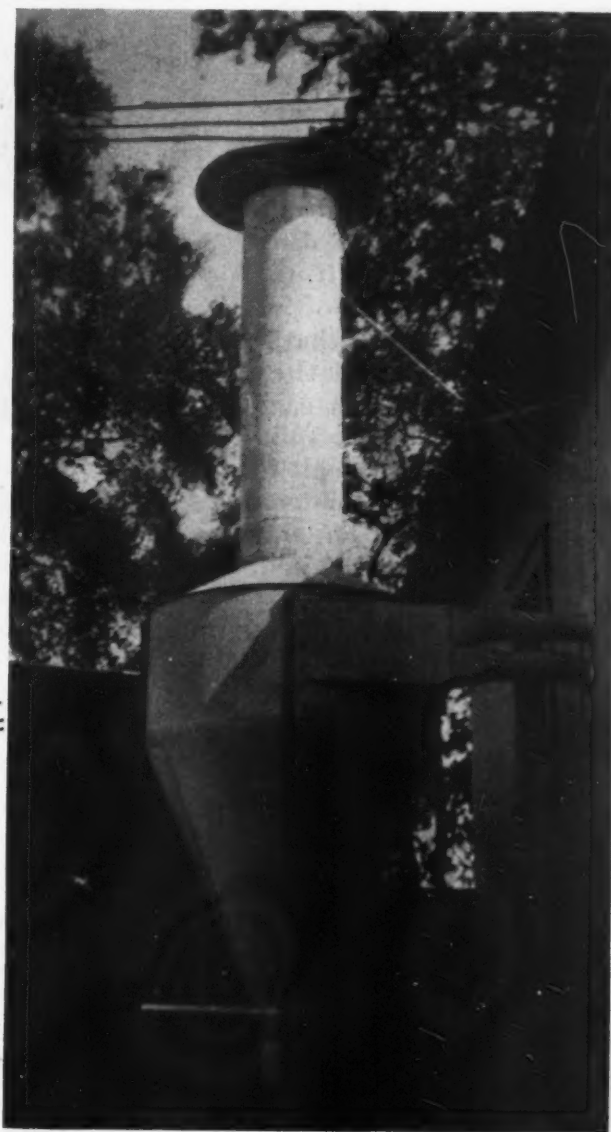
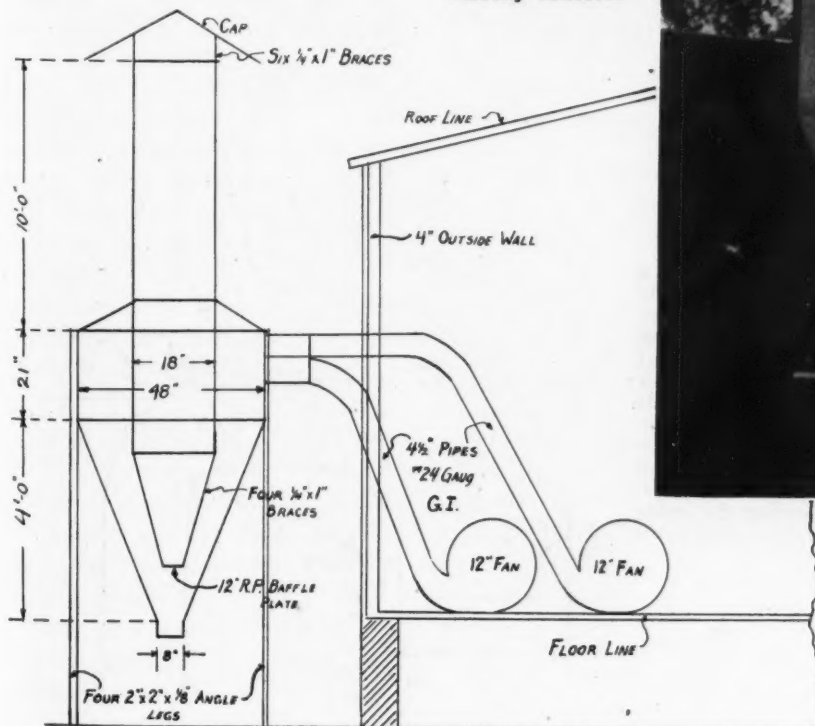
The roasters used are two gas fired units. One fan and collection system is hooked to each roaster as shown in the sketch. The small

pipes are passed through the wall into the top of the collector which is provided with a stack for venting off the smoke which is collected by the fans.

One of the serious problems was to handle the chaff which is exceedingly fine and light and in an ordinary collector would pass out with the air. The design passes the air into the collector through a trans-

At the right is a photograph which shows how the collector appears from the outside of the building. Note the two tube transformer and the high smoke stack

This diagram shows the essential dimensions and design of the collector. The smoke nozzle is brought down close to the hopper gate. The dimensions indicate that this is a high velocity collector



former which forms the end of the two pipes. The system is essentially a high speed collector with the sides of the expansion chamber parallel and not very high and the hopper very deep.



# FAN BLAST ENGINEERING

By PLATTE OVERTON  
Heating Engineer

## More About Volume Dampers

Platte Overton takes the stand that any duct system should be designed for resistance so that every branch gets its proper quota of air without having to use dampers. He admits, however, that dampers are desirable if the designer is not sure of his design. His stand is that if dampers are used they should be placed in each branch and not made splitters, since it is difficult to balance a splitter system. Your comments on this point of design are invited.

—The Editor.



Platte Overton

and branches is to carry the proper amount of air to the room served. A piping system that can not do this without one or more dampers in every branch is a failure.

The writer knows that hundreds and thousands of "splitters" have been installed and that the systems are functioning. However, we have taken the stand that if certain apparatus or engineering application is 51 per cent right and 49 per cent wrong it may be recommended, but if it is 49 per cent right, etc., it should be condemned. Splitters fall far below the 49 per cent.

Again, the article referred to straight mechanical systems. Trunk line ducts with velocities of 200-300 feet per minute are gravity systems and nothing else. They may have a booster fan in connection with them, but they remain gravity designs.

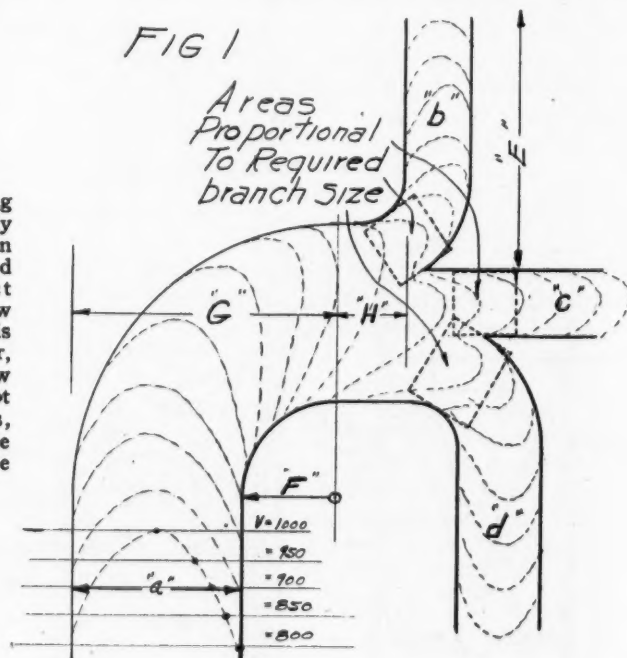
If these low velocity ducts are long, there is no question but that the near outlets must be volumed to get any pressure at all at the end

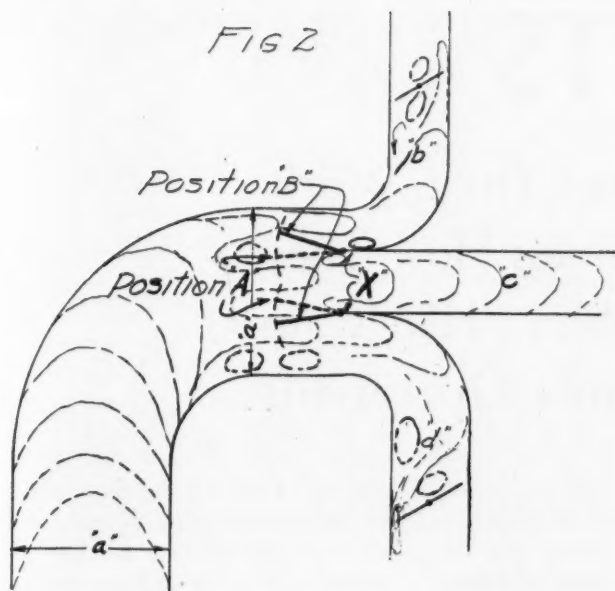
THE article "Volume Dampers" in the AMERICAN ARTISAN, issue of August 31, has raised a storm of debates, controversies and opinions. The writer has been showered with brickbats, among which there were a few roses.

This situation has no doubt been brought about by the failure of the writer to explain that all references to volume dampers, referred to such dampers in duct systems designed by engineers with at least a rudimentary knowledge of duct design.

For such trunk line systems as must have one or more dampers in every branch to balance them, I wash my hands. There is no excuse for any such system to begin with. The function of a trunk line duct

This drawing shows graphically the paths taken by air being forced through a duct system. Note how the flow of air is like that of water, with the flow tending to shoot around corners, leaving the inside corners dead space





The dotted lines show how air flow inside the duct is effected by splitters. Note how dead spots are set up and visualize how a large change may work no effect, while a small change may throw the entire air flow out of balance

of the duct, but the solution of these problems I leave to their designer. Personally I would recommend that they be abolished. There is no such thing as a combination fan and gravity system.

The writer has tested and balanced several large public schools in the past year. These installations ranged from 15 rooms to 115 rooms. In many cases the splitters were removed and volume dampers placed in the branches before an approved balance could be made. In other cases they remained in and functioned, but two volume dampers *should* have been installed.

So we fear the article must stand as it relates to pressure systems and trunk lines designed and proportioned to pressure losses. If the system is complicated and the designer doubts the proper velocities and volumes, then install volume dampers by all means, but not splitters.

Figures 1 and 2 are typical of conditions to be observed in the average mechanical system in homes.

Figure 2 we might title "Where splitters *must* be used." This is equivalent to preparing the antidote for a man who is about to take poison, and who knows in advance that it's dangerous.

There is a pertinent relationship between the volume damper and splitter in ducts "d" and "b", Figure 2. If the volume damper is set

first and the splitter later, the condition of position "A" may result. This gives duct "c" a re-entrant pressure loss abnormally high. Position "B" reverses this condition to ducts "b" and "d". If the splitters are set straight why install them at all, as we have points "x" that will act as splitters.

It is obvious that "b" in Figure 1 will get more than its quota of air and here a volume damper may be installed. The proportional area of "b" at the junction to the trunk line to eliminate a volume damper depends on the relation of "a"—"E"—"H"—"F"—"G". This will be discussed in an article on "Proportioning Ducts to Function Loss" in a future article. Here the writer bases the formula on observation

and experience alone. However, it works very well in application.

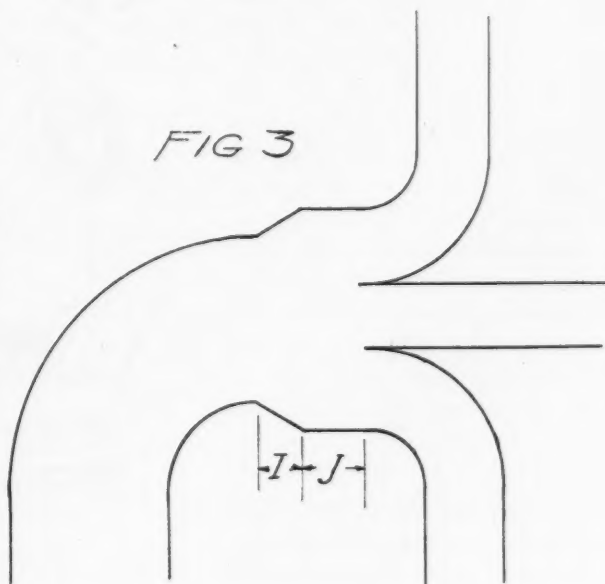
Roughly, if "H" is equal to  $2a$  the area is proportional as is "c" and "d" unless "E" is over 10 feet long, etc.

However, the preeminence of Figure 1 over Figure 2 is obvious. The dotted lines indicate velocities. They graphically tell us the story. The "turmoil" in Figure 2 is worth study. Remember that the same volume of air passes through both layouts. The ovals in Figure 2 represent dead spots where no reading is indicated on the draft gauge or negative readings may be found. As these spots are dead, it is obvious that the width of "a" where connected to the branches could have been reduced 30 per cent with no more pressure loss. Suffice it to say that Figure 2 will have 50 per cent higher pressure loss than Figure 1.

Since this discussion has started the writer has made it a point to ask various ventilation contractors in Chicago regarding their opinion on the matter. They are for volume dampers, and while they install splitters when called for on the plan, admit they are trouble makers.

Figure 3 is an application of a method used by an old engineer for whom the writer once worked. If the dimensions "I" and "J" are liberal, good results are obtained. He (the engineer) never used splitters.

Here is a kink practiced by an old timer. The widened out portion ahead of the branches is in effect a plenum chamber gathering pressure for the branches



# FLY-BY-NIGHTS

Ever Wonder How They Work,  
How They Get Business, How They  
Keep Out of Trouble? Here's An  
Inside Story of One's Operations

**P**ERHAPS you have often wondered how these fly-by-night dealers manage to get customers, sell heating plants none to good, collect their money and move on to the next town before their misdeeds catch up with them.

Here's a story telling how one such fly-by-night operates.

For the purpose of pointing out this moral we'll call this gentleman bandit—John Doe—nice appropriate name isn't it? Here today and gone tomorrow.

He gets his business through advertising—not the kind of advertising we deal in, but word of mouth advertising, that oldest, strongest, always workable method.

John Doe claims that one of the surest ways to get this word of mouth advertising started is to make return air corrections.

"I believe that the best advertisement any warm-air heating contractor can have is a satisfied customer," said Doe, "I mean a customer who can be used as a reference and particularly one who will become so enthused over his warm-air plant, either by correcting the circulation of the plant he owns or installation of a new one, that he will voluntarily talk and tell others of his satisfaction. Talking customers always relate the name of the contractor who has done the job and if their enthusiastic talk is properly followed up by the contractor business is bound to develop."

Doe's method of securing and capitalizing customer talk and enthusiasm is to carefully pick his

first customers. He outlines on a city map the better residential districts, each district is then divided into sections of about one-half mile square. Grocers, drug stores and garages in each section are visited to learn the names and addresses of several prominent persons who reside in the section. These persons are called on, the object being to learn if their present furnace is heating satisfactorily and also its exact condition. Doe has found that it is not wise to try to sell new

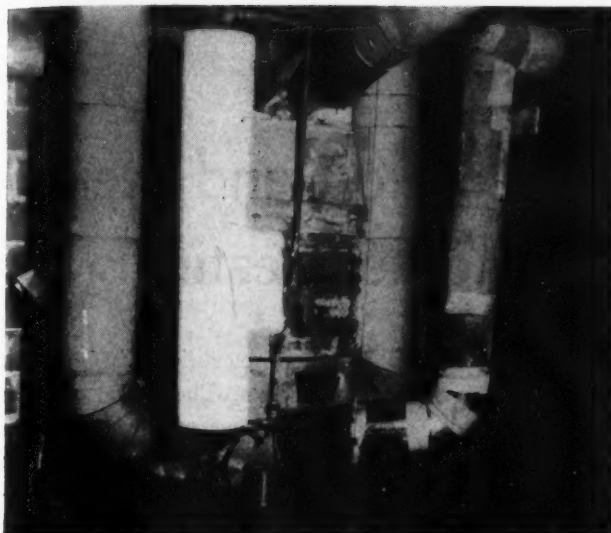
furnaces when making these visits because the average sale generally takes considerable time to close.

The real "sales" object of the visits are to make corrections in the return circulating systems and catalogue for future reference the new furnace prospects. Because he purposely chooses older homes he finds plenty of returns improperly engineered, which means the occupants are not getting the fullest benefit from their plant, are burning too much coal or in most instances both.



A favorite stunt is to get the furnace spread all over the basement floor. Of course it looks bad then. The idea is all right, but the application is usually all wrong





Would you like a Red Cross application such as this in your basement? No? Well, this is a fly-by-night job. Incidentally, this helped the system; but what an eyesore!

His object is to correct the existing faults as quickly and inexpensively as possible in order to get the owners enthused and talking about him because it is upon their talk and enthusiasm that he depends for future business.

Doe does not always follow the Standard Code in correcting return circulation systems in old houses. He can't and do an inexpensive job. His method is to follow the code in figuring correction requirements and to explain the value of the code to his prospects, but not to go into detail of all corrections required for the reason he does not want to "scare" them by price. His method, as related here, is to secure in a hurry, satisfied, enthused customers that he can use as reference and as a source for securing prospects for other repairs or sale of new furnaces. He does not represent his work as being 100 per cent correction of existing mistakes—rather he explains his work as being merely a beneficial hold-over until the proper correction can be made.

The photograph and drawing show an example of his work, not a how-not-to-do-it job, but one which he improved although his changes wouldn't meet with the approval of most contractors. In order to really correct this installation it would have been necessary to change the entire piping system, because the sizes were out of proportion to requirements, some too small, others too large. Doe knew

the occupants would not go to the expense of having the proper work done at the time of his call, so he figured the job according to the Standard Code and decided his best plan would be to "sell" them on another circulating air return which would be needed when the system was properly corrected—at the time of new furnace installation.

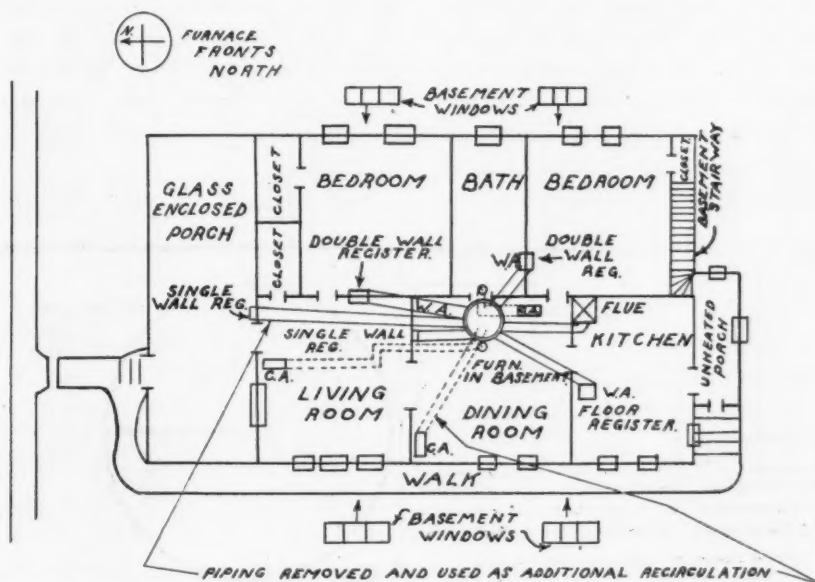
He found that one 10-inch warm air run could be discarded because the code figured a 12-inch pipe in its place. Because this run was to a glassed-in porch which was not used and could not be heated on account of the general warm air piping inefficiency he explained to the occupants it could be used as a return circulation duct to extend

from a far corner in the dining room. He sold the occupants on the idea of better heat—possible saving in coal and because he could use the 10-inch run to the porch and only have to supply one elbow and a floor register. This particular job was doctored so that it showed a more uniform efficiency. The work was finished in three hours time and as a test he built a strong fire and left the drafts open—the temperature of the house rose from 60 degrees to 79 degrees in twenty minutes, proving to the occupants they could be reasonably comfortable with the changes made.

In this instance both the man and his wife are prominently located in business. John Doe learned this at a drug store before calling on them. He expects their acquaintance in their section to assist him greatly in supplying more prospects.

It is a part of John Doe's plan to call on customers, either in person or by telephone, every three or four weeks to inquire if they know of anyone who would be interested in having their heating system corrected. Doe states he invariably finds that customers tell him, "I was telling Mr. and Mrs. So and So about your work and you might go see them because their furnace is acting up."

(Continued on page 28)



This is the heating plant of the furnace pictured above. The plan shows where a warm air run was switched to a cold air duct

# WEATHERMAKING

## Its Relation to Comfort and Health in Creating to Home Heating

**W**EATHER is a highly important thing in our lives and has been of vital interest to us through all the ages.

The weather affects each of us in our everyday habits and actions. Our recreations depend almost entirely on the weather.

Because the weather is so important in our lives, it has naturally become a topic of universal conversation. We talk about the weather on all occasions, but to say as Mark Twain once did that, "No one is doing anything about it" is as much of an exaggeration as was the premature report of that great writer's death.

Of course, it is not practical to try to control the elements of nature and make weather out of doors. The average person, however, is only out of doors 10 or 15 per cent of the 24 hours. We spend most of our lives indoors and it is indoor weather that lends itself to scientific control.

Doing something about indoor weather began in the laboratory. Investigations were first conducted to determine the importance of chemical properties of air. These chemical properties of air are—oxygen, carbon dioxide, nitrogen, argon,

By **MARGARET INGELS, M. E.**

helium, neon and traces of other gases, but the two which are important to us are oxygen and carbon dioxide. Most of us remember being taught in grammar school days that we breathe in oxygen and exhale carbon dioxide. It is a popular though mistaken idea that when we have remained in a room for a long time we have used up all the oxygen and fill the air with carbon dioxide.

Many tests have been made to find out what really does happen when the air is rebreathed. One of the most spectacular was that by the late Harry Houdini. He allowed himself to be sealed in an airtight box, and lowered to the bottom of a swimming pool. He remained in the box one hour and 31 minutes. In that time he breathed the air over four times. The oxygen was reduced 5 per cent below normal and the carbon dioxide content was increased to 110 times that of normal air. Yet Houdini is quoted as saying after such tests, that he felt no bad effects from such extreme chemical changes in the air he breathed.

Such changes are only obtained

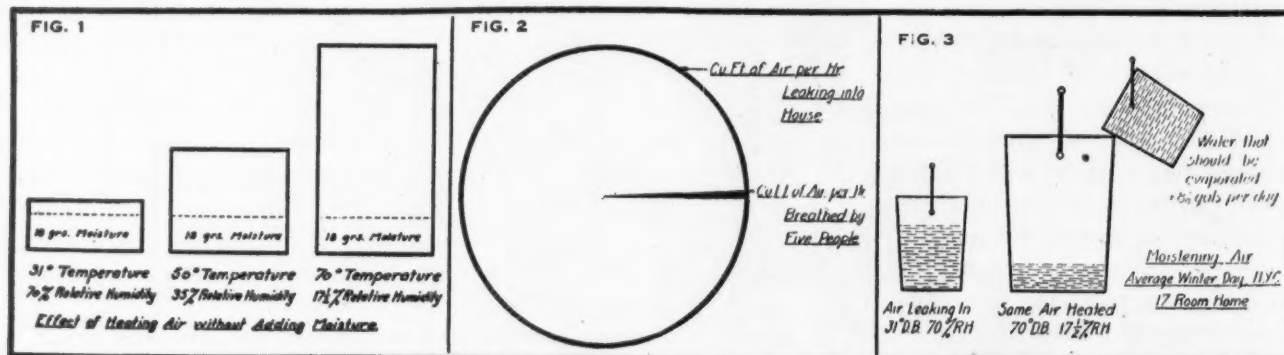
under test conditions in air-tight compartments. They never occur in rooms which we occupy. Even the air in the pit of a London theater after a crowded performance contained but a fraction of a per cent less oxygen than that of normal air.

In our homes, the air inside is practically the same, chemically, as that out of doors. There is always so much air leaking into even a well-constructed house that there is approximately a new supply of air every hour. The impossibility of the supply of oxygen in home air being exhausted is illustrated in Fig. 2, which is based on the average infiltration of air in a well built 17 room house.

### Human Tea Kettles

When in an enclosed room, we do not use up the oxygen in the air, nor do we fill the room with carbon dioxide. But we do do something else to the air, and it is this something else which is of importance. Let me explain it this way:

The human body may be likened to a tea kettle because it is constantly giving off heat and moisture. In fact, it gives off so much that if this heat were concentrated it would be sufficient to boil away or completely evaporate one-third of a pint



These three figures illustrate three important features of air condition. The text explains their meanings

of water an hour. Were it possible to change this heat to energy, it would be sufficient to lift us 2000 feet into the air.

The air surrounding us must be able to carry off this heat and moisture, and it is important that it be carried off at the rate at which it is generated. If the air is too cool and too dry, it absorbs heat and moisture too rapidly for comfort. This is what we should prevent during the cold winter months. If the air is too warm and too moist, we lose heat and moisture too slowly for comfort. This is what we would like to prevent during the hot summer months. The human body makes automatic adjustments to regulate the rate at which it is forced to lose heat and moisture, in different kinds of air. When cold, the body insulates itself, causing the appearance of "goose flesh" which contract the skin pores. When too hot, the body cools itself by excessive perspiration.

The factors which control the capacity of the air for absorbing our waste heat are called physical properties—temperature, relative humidity and motion. We know that each of these factors affect our sense of comfort. A hot, summer day is

much warmer when the humidity is high, and a cold, winter day is much more severe when there is a strong wind. To fully understand the effect of each of these factors, we should define them.

Temperature is a factor with which we are all familiar—32 degrees F. we know means ice, and 212 degrees F. means boiling water.

#### Relative Humidity

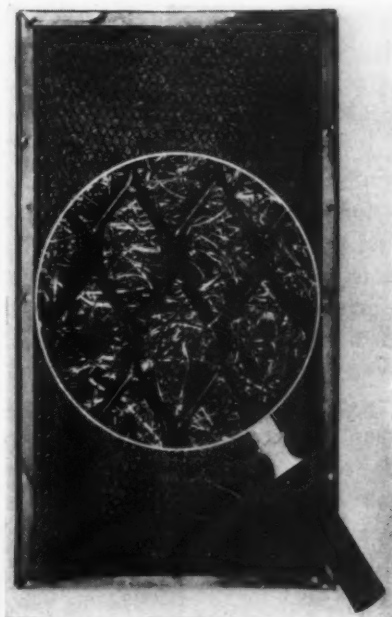
Relative humidity, however, is not well understood. It is important because it influences the effect of



Margaret Engels, M.E.

the other two factors on our sense of comfort. It may be defined as the amount of moisture contained in the air at a given temperature compared to the amount of moisture the air would contain were it full or saturated. The moisture that air is capable of holding, depends on the temperature of the air. The warmer the air becomes, the more moisture it is capable of holding.

For example, consider a given quantity of air at 31 degrees temperature and 70% relative humidity—see illustration, Fig. 1. If this air is heated to 50 degrees and no moisture is added, the relative humidity is reduced to 35%. If the air is heated still further to 70 degrees, and the moisture content kept the same, the relative humidity will be



This is the way the filter looked before it was put into use. Compare the difference in the air passage

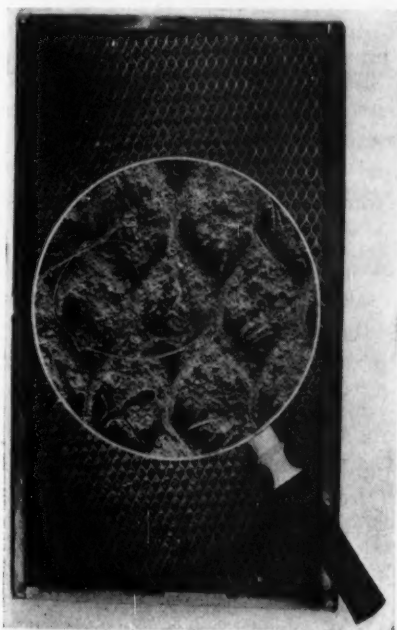
only 17½% because the air's capacity for holding moisture has been greatly increased by heating it to 70 degrees. Heating air without adding moisture makes it relatively drier, or in other words, lowers the relative humidity.

This condition of 31 degrees and 70% relative humidity is the average outdoor condition for New York City for February and is approximately the average for the four cold months. When this air comes indoors, which it does even with all windows and doors closed, as has been explained, and is heated to 70 degrees with no moisture being added, it has a relative humidity of 17½%. This is a kind of air in which we live during the winter. It is the weather of the Sahara Desert. What effect does this warm, dry air have upon us?

#### Dry Air and "Colds"

Winter is the time when we are bothered most with colds. If we run true to the average person in the United States, we will have at least two good hard colds a year.

Studies made by the United States Public Health Service indicate the prevalence of various respiratory illnesses during the winter months, a time when the air is almost sure to



This magnified view shows a typical dry filter after use in a house heating system. All this dirt would have gone into the rooms if it were not for the filter



be too dry and overheated. Fig. 6 shows this data, and it is interesting to note that the maximum number is in February, our driest month.

When we go out of doors on cold, winter days, our noses run. This is a nuisance. But it is an interesting fact that the nose is supplying the moisture to humidity the air before it gets to the lungs. When outdoors, the mucous membrane is very moist. When we come indoors, the warm, dry air quickly dries the mucous membrane, causing it to become irritated, and, it is believed, a more active field for bacteria. Dry air means dustier air which is germ-laden, so that more germs reach this active field for infections.

Dry air affects our looks, too. English women and Irish women are fortunate to live in moist climates. They do not keep their homes as warm as we do, so that their indoor air is quite moist. Their complexions are much more beautiful than those of the American woman, and one medical authority attributes this to the moist climates which they have indoors and out.

#### Dry Air Is Dusty

Dry air indoors also has a decided deteriorating effect on interior furnishings. It causes glues to dry out, and woods to warp. The thread in fabrics dry out so that rugs, upholstering and draperies show wear very quickly. As stated, dry air means dustier air, so that the problem of keeping things clean is made more difficult.

The American Society of Heating and Ventilating Engineers, the United States Bureau of Mines, the United States Public Health Service carried on a series of comprehensive tests to find out what the temperature, relative humidity and motion of air should be for maximum comfort. These investigations were made in rooms where each one of the variables could be changed and hundreds of tests were made. People of all ages and all professions voted on the most comfortable condition, and doctors made tests to find out the reaction within the body. A desirable condition was

found to be 70 degrees and from 35 to 40% relative humidity. To increase the relative humidity of indoor air in winter from 17½% at 70 degrees to 35 to 40% at 70 degrees, means adding large amounts of moisture to the air. It takes many gallons a day. For example, a 17-room house, even when weatherstripped and thoroughly insulated, would require the evaporation of eight gallons of water every day during the winter in order to properly humidify the air.

Air should be in motion or we would become encased in a layer of warm, humid air, which, as it approaches body temperature loses its capacity to absorb heat.

Controlling the temperature, relative humidity as well as providing clean air is known as air conditioning. Like all sciences, it is based on scientific laws. Many types of building now condition their air so that they make their own weather.

Department stores are air conditioned so that summer and winter shopping in them is a pleasure. Moving picture theaters are vastly increasing their patronage by providing conditioned air or manufactured weather. Conditioned air is provided in the House of Representatives and Senate Chamber. One air conditioned office building in Texas served as a home for a hay fever sufferer who moved into the building and stayed there throughout the season. He felt completely relieved when living in this air.

In the industries there are more than 200 different kinds of products made in factories who manufacture their weather. Candy — tobacco — foods — drugs — textiles are among those represented.

The science of air conditioning is now being applied to improve the air in the home in winter. Later it will be extended to home cooling. The importance of making the weather in which we live is being realized. Controlling not only the temperature, but the humidity, motion and cleanliness of the air is a health measure and important to true comfort.

#### METAL MEETING

(Continued from page 20)

of the Inland Steel Company, gave a very interesting talk on the steel situation from the manufacturer's point of view. Mr. Meyer expressed optimism over the future of sheet steel and sheet uses. He also stated that sheet prices are now at bottom prices and seemingly can not drop lower.

One of the topics of discussion which brought out several conflicting trends of thought was the question of the mills giving the distributor a 2 per cent discount for cash. No definite decision on this point was reached.

The committees scheduled to appear at this meeting reported incomplete investigations and were held over until the next meeting of the association.

The general opinion expressed from both mills representatives and distributors was that business conditions were somewhat better than they were last May and that while there had been no marked change for the better a gradual betterment had occurred.

#### FLY-BY-NIGHTS

(Continued from page 25)

"I have many times secured and done a job on the first call," John Doe says. "I carry my overalls and materials in my car ready for work and park around a corner away from the house where I am calling in order not to scare my prospect. Many customers are surprised when I take a job and go to work at once — they seem to think they will have to wait hours or several days for the work to be done. I like to do the job immediately while they are in the mood."

John Doe also carries a map marked into districts and spotted with houses in which he has made installations or repairs. He also carries along a list of the occupant's names. These are impressive and inspire confidence in prospects, especially when he urges them to get in touch with his customers.

# MERCHANDISING ALMANAC



## A Business-Building Idea for Every Week in the Year

### Week of October 26



**COLUMBUS**  
"went East by sailing West."  
Almost no one is "interested in a new furnace." Ever think about making an advertising and selling drive on one single specialty item

just to get in the house and examine the heating plant? You can work this stunt with new designs of register faces, fans, humidifiers, heat regulators, filters, or any other item which has the element of novelty. When you have finished the town on one item start all over again on the next. You'll never get through. But don't forget to discover America on each trip.

### Week of November 2

**WHO** is the chimney expert in your community—the combustion engineer, the man who knows that a fire won't burn without oxygen and an adequate draft pulled through the bed of solid fuel. You can be that man. Why not? A large percentage of furnace troubles can be traced to improper draft—faulty flues and chimneys. Get yourself a good draft gauge and devote a little study to chimney problems. This is one of the things it will pay you to know about. It is one of the things in which you should be expert.

### Week of November 9

**YOU** must get a profit on everything you sell—material, labor, overhead. What about credit accommodation? If you sell on extended terms you can't expect the manufacturer to wait for his money while you wait for yours. You can't afford to tie up your money. The customer should be made to pay for credit accommodation and

the unpaid balance covered by properly secured notes. If your local bank won't discount these notes get in touch with one of the national institutions who specialize in deferred payment financing. Stop granting credit on a loose catch-as-catch-can basis and systematize your deferred payment practice at once.

### Week of November 16

**WHAT** is your credit standing? How much can you borrow at the bank on your personal or business credit? If you don't know, it may be a good idea to find out. It is the bank's business to sell the use of its money and the manufacturer's business to sell



materials. You can get as much reasonable credit accommodation as you need from the latter if you do not abuse his leniency. Credit is a valuable asset. It is based not so much on honesty (will to pay) as upon **ABILITY TO PAY**. If you will be aggressive in keeping your collections up to date, you will have no trouble in keeping your own accounts up to date.

### Week of November 23

**ARCHITECTS** who keep abreast of the times are becoming aware of the need for healthfully conditioned air in the home. Have you taken the trouble to acquaint the leading architects of your community with your ability to provide conditioned air? They will be interested in learning that a warm air furnace, with positive air movement, an air washer or filter and

humidifier contains all the essentials of the most elaborate and expensive "air conditioning" system, with the sole exception of refrigeration and dehumidification (in summer) which is necessarily expensive and more or less in the experimental stage. It will pay you to get architects thinking of warm air heating in terms of what it really is—not as a cheap substitute for hot water or steam.

### Week of November 30

**DO** you realize that every time an oil burner or gas furnace is sold the need is created for installing an incinerator to dispose of rubbish formerly burned in the furnace? Here is an idea that contains ready cash—especially to the dealer who is selling oil burners or gas furnaces.

### Week of December 7

**THERE** is much to be gained from knowing your competitors. You can learn a lot from them. You can help each other to become better competitors. One handicap in effecting local organizations of dealers is the prevailing mutual distrust. You can dispel much of that unwarranted distrust by being as free and honest with your competitors as you would like them to be with you. Talk freely (and I don't mean brag) about your business problems and how you meet them. (You haven't got many secrets.) Once you have started this co-operative spirit, whether there is a definite organization or just an informal social group, you are sure to profit by the exchange. Why not start things off with a small group at lunch; and when you have started it, don't let the idea die.





# GRAVITY EXHAUST VENTILATION



## Skylight Ventilators

**Y**OUR letter of October 1st asks what are the proper proportions and type of ventilator to use on hip skylights. I am glad to go into this matter because I see so many skylight ventilators which are practically worthless that I am inclined to think in most cases no attempt is made to figure out the size, let alone the type to be used.

As to the type of ventilator, when you say "shop-made," of course, you are making it impossible for me to answer your question. The truth of the matter is that the ventilator should not be shop-made. I am not going to state that no sheet metal shop can turn out a good ventilator, but I am in a position to definitely state that no sheet metal shop that I know of does turn out good ventilators. Shop-made ventilators are, according to my observations, almost universally poorly made and inefficient.

It is only fair to the ventilator manufacturer to call attention to the fact that the manufacturer's objection to shop-made ventilators is not based on the fact that he does not get to sell the ventilators which are manufactured in the shop. As a matter of fact, these demands are for small sizes and small quantities not attractive from the standpoint of manufacturing profits. The manufacturer's objection to the shop-made ventilator is that it does not ventilate, and consequently gives a setback to his entire promotional effort, on which he is spending time and money to educate the general

By **PAUL R. JORDAN\***

October 1, 1931.

Paul R. Jordan,  
Indianapolis, Ind.

Dear Sir:

Knowing that you are a very busy man, the writer is rather reluctant in asking a favor but being a regular reader of your articles in the **AMERICAN ARTISAN**, feel that you are in the best position of anyone to answer my question, viz, "What are the proper proportions and type of ventilator, shop-made of course, to use on hip skylights?"

Have had quite a number of arguments with other sheet metal workers as well as contractors relative to this.

If you feel free to give me this information it surely will be appreciated.

Very truly yours,  
(Signed) I. C. Allebaugh.

public as to the values and possibilities of ventilation.

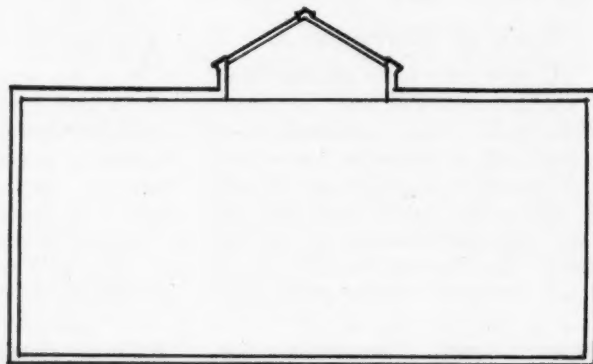
I can not give you any proportion figures applicable to shop-made ventilators, no matter how well I should like to do so for most shop-

made ventilators are so variable in design and in efficiency that I have no basis to work upon.

It is, however, entirely possible to get satisfactory results out of a properly designed manufactured stationary ventilator for skylight work. A rotary, of course, is better, but for ordinary skylight work, which really means relief from heat radiated from the pocketed air in the skylight, a good manufactured storm band type ventilator will often answer.

The size of ventilator to use depends on what the conditions are. If it is merely a proposition of ventilating the skylight itself that is comparatively simple. The trouble lies in the fact that the skylight is usually over a room very much larger in area than the skylight itself, and the occupants of the room expect the skylight ventilator to take care of the entire room. In perhaps 50 per cent of the heat removal problems we are called upon to solve, we find one or more skylights which are ventilated, and in practically every case inadequately ventilated. The interested party al-

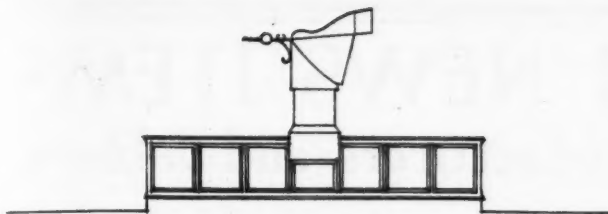
Here is a typical room which is to be ventilated by a ventilator placed in the skylight. The text explains what can and can not be done with ventilators built into skylight



**THIS SKYLIGHT MUST VENTILATE THE WHOLE ROOM**

\*The Paul R. Jordan Co., ventilator manufacturers, Indianapolis, Ind.





ONE VENTILATOR OF ADEQUATE SIZE IN THE CENTER

MAKES A GOOD INSTALLATION

The best place to put a skylight ventilator is on the center point of the skylight. If the skylight is peaked, put the ventilator straddle of the ridge or in one side at the ridge

ways dismisses the skylight ventilator with the remark, "It is no good." I suppose that if it were any good we would never have been called in; but the interesting element is the attitude of the owner, or tenant, and his apparent resentment toward the inadequate skylight ventilation, which resentment is reflected toward the installer of the skylight, if he happens to be known.

It is true that in many instances it is impossible to sell the owner on the idea of adequate skylight ventilation, but where it is possible, it is advisable to provide enough ventilation to take care of not only the immediate skylight, but of the room below it.

Now as to estimating the amount of ventilation necessary for the

room; the use the room will be put to will naturally determine that. You can refer to any good table of recommended air changes per hour for a basis for this calculation. If the use to which the room is to be put has not been determined, or if for any reason it does not furnish you a basis for your estimate, you may safely go back to the formula for roof space ventilation, applying it to the area of the room to be ventilated. This formula is as follows: "TAKE THE AREA IN SQUARE FEET AND MULTIPLY IT BY 80." The result will be the necessary air delivery in cubic feet per hour.

If it so happens that you merely want to ventilate the skylight, use the same formula and apply it to

the number of square feet of glass in the skylight. This will be somewhat more than the net area of the skylight opening into the room.

Of all methods of installing ventilators in skylights, elbowing out the end is perhaps the worst. The best installation is for the ventilator base to straddle the top of the skylight. Next best is the installation of the ventilator base on one side of the skylight in the extreme top. Whether to use one or more ventilators depends on the length of the skylight; also on how the locations of the skylight ribs work out with the dimensions of the ventilator base.

To calculate the size of ventilators, determine first whether you will use a rotary or stationary ventilator. If you use a rotary ventilator, use a conservative manufacturer's table of capacities. If you use a manufactured storm band stationary ventilator, cut your rotary capacities in two. In other words, if you figure a 24-inch rotary ventilator as having a capacity of 97,000 cubic feet per hour, then figure the storm band ventilator as having a capacity of 48,500 cubic feet per hour.

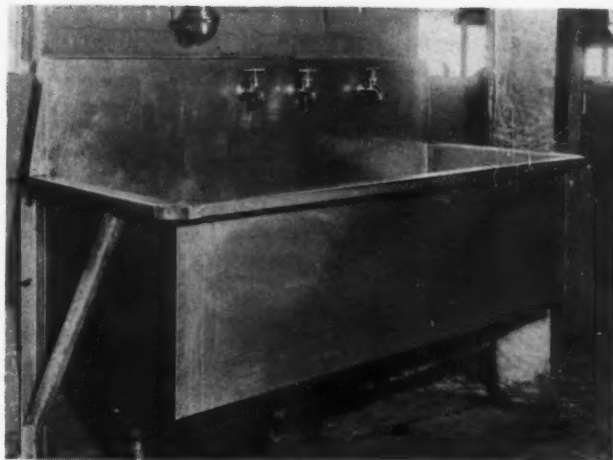
## World's Largest Monel Sink?

**B**RIGHT metals are rapidly gaining popularity in residential and commercial kitchens, replacing the now familiar enameled iron and vitreous sinks, work-boards, tubs, etc.

This illustration, for instance, shows what is claimed to be one of the largest, if not the largest, kitchen sink yet fabricated. This one is made of Monel metal and was fabricated by Vernon F. Connor, sheet metal contractor of Albany, N. Y.

This biggest of all sinks was designed and built for a local bakery. It is to be used for washing the mixing and cooking utensils used in the bakery.

This bakery sink is said to be the world's largest sink fabricated in Monel metal. It looks as though the whole bakery might be washed in it



The sink was sold by Mr. Connor, who took advantage of the bakery owner's desire to remodel his shop so that everything in it would be

shiny and clean and could be shown to customers. Mr. Connor explained how the new bright metal was just the thing for the sink.

# NEW ITEMS and NEWS ITEMS

## From and about the Manufacturers and Jobbers

### Niagara Revolving Machine Bench

A new, space saving welded steel bench for tinner's machines has been placed on the market by the Niagara Machine & Tool Works of Buffalo, N. Y. Its unique feature is a turret top which holds four hand operated rotary machines for working sheet metal such as crimpers, beaders, burring, turning, wiring machines, etc.

The machine bench affords ample space between the machines for four



operators working simultaneously, yet occupies less than three square feet of floor area. Any one of the four machines may be brought forward into operating position by means of a rotatable top. A clamping device centrally located is released when the table is to be rotated.

The revolving machine bench is of strong construction made of heavy plate material. The base is large and the column is cylindrical. The rotating steel top is most rigid and is faced with wood so that the machine standards can maintain a tight grip.

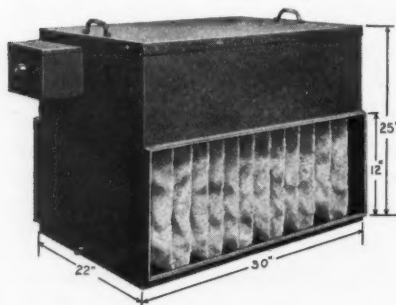
### Inland Steel Makes Floor Plate

Inland Steel Company, Chicago, is now in production on the new 4-Way Floor Plate. The pattern of the new plate consists of short lineal projections arranged alternately at right angles to each other. This pattern per-

mits less weight per square foot without loss of strength because there is less weight in the projections. It is non-skid regardless of the direction of traffic, and individual plates can be laid in any relation to each other without altering the design. The pattern also assures efficient drainage and easy sweeping.

### Peerless Electric Co. New Accessory Circular

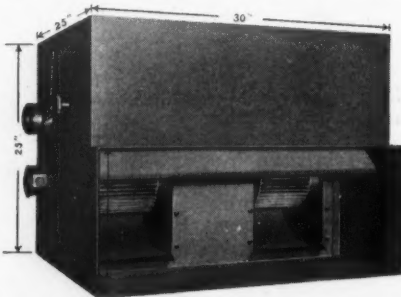
Peerless Electric Company, Warren, Ohio, have ready for mailing a new dealer circular showing the company's line of well known propeller fans, register boosters, booster fans and also



the newer line of blowers, filters and humidifiers.

This folder can be secured by writing the company.

The circular shows all the old and new equipment and also describes the characteristics of each unit. For example the blower is shown with sizes as a separate unit and also in a typical warm air installation. Details of



the blower and what it will do are tabulated for the dealer's convenience.

The Peerless Air Filter is a unit having unique features. Illustrations show how the unit is constructed and how it is used. The humidifier is of the washer type designed to be used with the company's blower, the two units fitting together.

### Copper & Brass Ass'n Elects Officers

At the eleventh annual meeting of the Copper & Brass Research Association held at its offices, 25 Broadway, New York, recently, R. L. Agassiz, chairman of the board of the Calumet & Hecla Consolidated Copper Company of Boston, Mass., was re-elected president.

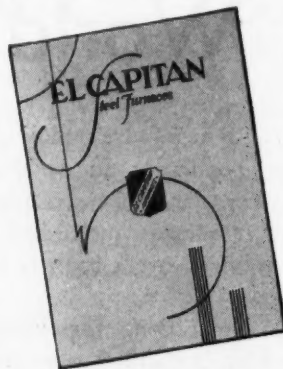
Vice-presidents elected were: F. S. Chase, Louis S. Cates, H. Donn Keresy, C. D. Dallas.

C. T. Ulrich was elected treasurer; H. Foster Bain, managing director; William A. Willis, manager; Bertram B. Caddle, secretary.

### El Capitan Line Described in New Midland Catalogue

El Capitan steel furnaces, product of the Midland Furnace Company, Columbus, Ohio, and Des Moines, Iowa, are fully described and illustrated in a new catalogue just off the press.

The pages of the catalogue discuss in detail the features of the El Capitan furnace. These features are also illustrated by cut-away drawings. The regular El Capitan and the company's wood burning and heavy duty furnaces are shown. So, also, are the room heater and the oil burning furnace.



A section of the catalogue is devoted to illustrations and descriptions of such parts of the furnaces as the brick linings, grates, radiators, collars, seams, humidifier, etc. Recommendations for installing and a display of the newest products—the square cased unit and the conversion burner furnace—are fully covered. Tables at the end of the catalogue give full details of sizes, weights, ratings, etc.

This instructive catalogue may be secured by writing the company.

## Motor Wheel Corp. Holds Chicago Get-Together

Thursday evening, October 15, the heater division, Motor Wheel Corporation of Lansing, Michigan, entertained approximately 150 of their dealers, prospective dealers, builders and architects at a get-together meeting and dinner. The business sessions were held in the showrooms of their Chicago distributors, L. Marble Co., 2309 Michigan Avenue, and the dinner at the Hotel Metropole.

The purpose of the meeting was to acquaint dealers, builders and architects and the manufacturer with each other and to exchange ideas on automatic heat business prospects and the M. W. products.

Mr. Markel as chairman of the meeting gave a short talk on warm forced air and stated that he is finding an increasing interest on the part of architects and builders.

Howard Piatt of the Engineering Department took charge of the technical end of the meeting. Mr. Mulvogue, M. W. merchandising manager, explained in detail the dealer co-operation service consisting of co-operative advertising, road signs, direct-mail campaign, store signs, window display cards, photo album, sales manual, posters, installation signs, etc.

C. L. Stebbins, sales manager of Motor Wheel, told of the fast growing demand for automatic weather control, not only in public buildings but in homes. "A real profit can be made by the dealer if he will make the proper sales effort and apply himself in the right way," he said.

Howard Spon of the Gardner Advertising Company, New York, advertising counsel, gave a very interesting talk on advertising in general. "You can't get along without advertising these days. Don't depend upon your advertising, however, to do everything. It will introduce you, give you prestige, help break sales resistance, but remember, it won't go out and get the signature on the dotted line," said Mr. Spon.

Mr. Perrigo of the Perrigo Corp., Milwaukee, distributors and installers of heating equipment, explained the workings of the intensive sales campaign his company is undertaking. This campaign first secures prospect names from telephone call. These prospects are put on a mailing list and receive four pieces of direct mail. After the first letter is mailed the name is given a salesman who follows the name up after the second mailing is made. From then on direct mail and personal follow up is intensive.

Mr. Perrigo stated that he could verify the statement that sales are based on quantity calls. His campaign has secured an average of ten interviews from every fifty house to house calls and resulted in one sale from the ten interviews.

He stated that builders and architects have been most difficult to interest because of the depression in new construction.

C. C. Carlton, manager of the Heating Division, said he believed warm air heat in the very near future will be the most popular method of heat for all types of buildings because air conditioning is the logical outgrowth of warm air heating.

The general spirit of the meeting was optimistic and several guests expressed confidence in an upturn shortly.

## David Levow Mails New Price Card

David Levow, 308 West 20th street, New York City, is now mailing a new price card listing a number of items on which an October special 15 per cent discount will be given. This discount denotes a reduction in price.

Among the items listed on the card are "Fitrite" bronze roof strainers of several types. Some types of malleable iron roof strainers are also listed for discount.

A copy of this card will be mailed you on application to the company.



**Annual Conference on Bituminous Coal**—November 16-21, at Pittsburgh, Penna.

**National Association of Sheet Metal Distributors**—October 20, 1931, at Palmer House, Chicago, Ill. Secretary, Geo. A. Fernley, Philadelphia, Penna.

**National Warm Air Heating Association**—December 3, 4 and 5, 1931, at Mayflower Hotel, Washington, D. C. Managing Director, Allen W. Williams, A. I. U. Building, Columbus, Ohio.

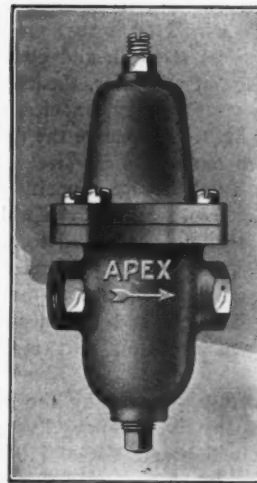
**American Society of Heating and Ventilating Engineers**—January 25-28, 1932, at Cleveland, Ohio. Secretary, A. V. Hutchinson, 51 Madison Avenue, New York City.

**International Heating and Ventilating Exposition**—January 25-29, 1932, at Cleveland Auditorium, Cleveland, Ohio. Manager, Charles F. Roth, International Exposition Company, Grand Central Palace, New York City.

**American Society of Refrigeration Engineers**—January 25-29, 1932, at Hotel Cleveland, Cleveland, Ohio. Secretary, David L. Fiske, 37 West 39th Street, New York City.

## New Reducing and Regulating Valve on Market

The Apex Regulator Company, Marshalltown, Iowa, has perfected a new reducing and regulating valve which will automatically maintain the proper reduced or low pressure regardless of fluctuations in supply. The valve is suitable for use on domestic water systems, humidifiers, steam tables,



water coolers, washers, and other types of water handling equipment.

On furnace systems where the humidifiers employ a spray jet, drip valve, nozzle or orifice for the application of the water, this valve will supply clean water at a steady pressure to the valves or orifices. Dirty water results in the valve getting clogged while pressure variation results in noise or improper operation.

The Apex Class BB Regulator has built into it a self-contained strainer and drip pocket which protects the valve. All parts and materials have been thoroughly tested in the laboratory and in service.

Full details of list prices, discounts and installation may be had from the company.

## New Method to Change Coal to Oil

A process of liquefying coal, that is claimed will revolutionize the industry and challenge oil and gas as a fuel, will be on the market within the next year, according to an announcement by Oscar C. Leebase, New York, who returned recently from Germany. Little could be learned about this new process other than the fact that Prof. Ludwig Tuebben, president of the Institute of Technology, Berlin, a world authority on mining, and Johannes Maruhn, an eminent engineer of Berlin, were the discoverers of the new process.



### Kleenaire Filter Company Introduces Filtex

The Kleenaire Filter Company, Stevens Point, Wisconsin, maker of the Kleenaire filter unit for furnaces, announces a new, low priced filter unit to be called Filtex.

This new filter is composed of wire cloth and textile material fabricated to form a dust retaining medium of high efficiency and low resistance to air flow. The wire used is rust proof and chosen for its strength and durability.

A feature of the filter, the company states, is that it may be cleaned by brushing lightly to remove the dirt and dust taken out of the air stream.

The unit will have a capacity of 800 c.f.m. The units can be assembled in as many sections as desired to accommodate different sized systems. The company is also prepared to manufacture special sizes and thicknesses for makers and users of unit fans and blowers.

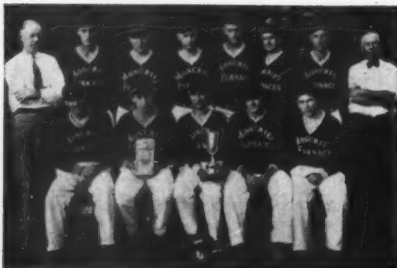
The feature stressed by the Kleenaire company is the new low price. The unit will bear a list of \$10.00 per unit with liberal discounts for dealers and jobbers. These discounts can be obtained by writing the company at Stevens Point.

Sample sections will be supplied free for trial or inspection.

### Moncrief Ball Team Wins Amateur Pennant

The picture here shows the Moncrief Furnace ball team, which won the 1931 championship in their home town amateur league. The members say they look upon their furnace as a winner and just naturally feel they have to come through on top of the heap in their playing.

The manager, James Denman, at the left, is proud of his team. Jim is as-



sistant superintendent of the foundry. The superintendent, John W. Kemp, is the artistocratic looking gentleman at the right.

It is cheering to learn that the Henry Furnace & Foundry Co., manufacturers, reports a satisfactory year, considering the times. Recently the foundry advanced from a five-day week to full time.

### Bennett S. Chapple, Jr., Becomes Managing Director Armco Distributors Assn.

Bennett S. Chapple, Jr., has been appointed managing director of the Armco Distributors Association, succeeding G. W. Breiel, whose other duties in the Armco organization have made this change advisable.

### W. A. Whitney Mfg. Co. Announces New Punch

A new Punch of special interest to the sheet metal trade, to be known as No. 4-B Punch, has been announced by the W. A. Whitney Manufacturing Co., 636 Race Street, Rockford, Ill., manufacturers of the well-known "Whitney Lever Punches."

This tool, which is shown in the accompanying illustration, is a one-hand punch of sturdy construction, having a capacity of 1/4-inch hole through 16-gauge iron, with a 2-inch



depth of throat and weighs but 3 lbs. and is only 8 1/2 inches long. It can be furnished with punches and dies ranging in size from 1/16 inch to 9/32 inch by 1/64 inch, which are interchangeable with the No. 4 Punch made by the same company.

The handle is designed to fit the hand, at the same time giving perfect balance to the tool. The main parts, jaw, lever and intermediate are drop-forgings; all wearing parts being heat-treated.

For further information, write either your jobber or the manufacturer direct.

### Francis H. Mason Joins American Air Filter Co.

From Francis H. Mason comes the announcement that after seven years spent with the Warm Air Furnace Fan Company, on November 1st he will take over the sale of the entire line of furnace filters made by the American Air Filter Company of Louisville, Kentucky, becoming their exclusive representative in the United States.

The American Air Filter Company make a complete line of furnace filters with a wide range of prices to meet requirements of any and all air conditioning jobs, Mr. Mason says.

He will maintain headquarters at 1275 Marlowe Ave., Cleveland, Ohio.

### Meyer Furnace Co. Leaflet Describes "Conditioned-Air"

The Meyer Furnace Company, Peoria, Ill., manufacturers of the Weir furnace, have prepared a folder illustrating and describing the company's "Conditioned-air" unit.

Basically this unit consists of a Weir all steel furnace with a crescent radiator enclosed in a square casing with air passageways scientifically designed for forced air work. The liner sheet follows the contour of the furnace point by point.

To this furnace a low speed centrifugal blower of double inlet type and having double by-pass dampers for gravity flow is attached. The housing for the blower is also the housing for the filter. When the plant is working on gravity the air is by-passed around the filters and the blower cage so that friction is little greater than in a straight gravity plant.

The unit comes equipped with a special vitreous enameled vaporizer using a float valve to maintain water level.

All operations of "Conditioned-air" are automatically controlled by equipment which is part of the unit. The furnace is controlled by a room thermostat actuating check and draft. The blower is controlled by a bonnet thermostat which is adjustable for temperature. There is also a limit control which checks the fire should the bonnet temperature get too high.

Copies of the folder may be had from the company.

### Sternaman Makes Cast Iron Smoke Pipe by New Process

The Sternaman Company, 441 Williams Street, Springfield, Ill., are making a line of cast iron smoke pipe for which several unique and important features are claimed.

The Sternaman pipe comes cast in complete units just like sections of ordinary pipe. These units are made in T, elbows, clean out door sections and elbow sections so that any bend or turn in the pipe can be had without special sections of fittings. All units are assembled through a special mechanical connection which insures rapid assembly without special tools.

The company states that only a small stock of sections need be carried because of this feature.

Full particulars on prices, stocks, agencies may be had from the manufacturer.

# Hurry, Men! Now's Your Time!



The first cold days have revealed some unexpected weaknesses in some of the furnaces in your territory.

Repairs Must Be Made—  
and Quickly

## HANDY PIPE

will help both your speed  
and your profits—

And We Are All Ready to  
Supply Your Needs

F. Meyer & Bro. Co.  
Peoria, Illinois



# Cheapness FAILS!

HAPPY relations with your customers cannot be maintained by selling them cheap products of doubtful merit. Performance is the power that makes permanent friends.

The MASTER Heat Regulator is an old reliable product that has proved its worth by years of service. It is now priced as low as a really dependable heat regulator can be priced and remain on the market. Yet it measures up to the high standards of perfection and performance that successful dealers require. Operates instantly on heat changes of one degree or less, as set.

TYPE 22, with Full Electric Motor, entirely Automatic, \$55. Same, with 8-day jewelled clock control, \$80.

TYPE 44, Gradual Operation, prices on request. Your discounts from these list prices insure handsome profits on every installation. Write us today!

## WHITE MFG. CO.

2362 University Ave. St. Paul, Minn.



# MASTER HEAT REGULATOR

Mention AMERICAN ARTISAN in your reply—Thank you!

H&amp;C AUTOMATIC HEAT CONTROL

**DEPENDABLE!****Never Requires Servicing**

Every sale nets you a good clean profit—no part of it goes back into servicing.

**Performs Perfectly**

You can't beat it at any price. Customers invariably become enthusiastic boosters.

**Priced to Sell to the Masses**

With the H & C you can reach the big market, for its selling price is well within the reach of even the small home owner.

**Ready for Immediate Delivery**

See your jobber at once. Write to us for information, sales helps, etc.

**DEALER PRICE \$24.50**

*Including every necessary fitting. Sells for \$45.00 Plus Installation*

**HART & COOLEY MFG. Co.**

General Sales Office:

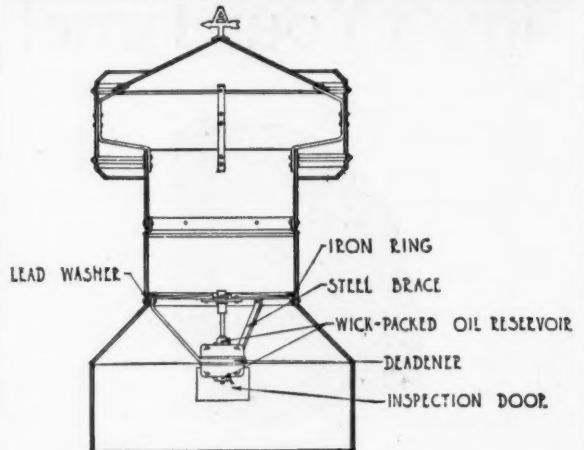
61 W. KINZIE ST.

CHICAGO, ILL.

H&amp;C AUTOMATIC HEAT CONTROL

**JORDAN AERO**

VENTILATION

**FAN VENTILATOR**

**A Unit for greater efficiency.  
Combining gravity, ventilator and fan action.  
Eliminating wind and weather hazard.**

*Backed by a complete engineering service*

**PAUL R. JORDAN & CO.**

630 South Delaware St.

Indianapolis, Ind.

**Mineral Baths**

Physicians strongly recommend  
Saline-Sulphur Salts for rheu-  
matism, nervousness, neuritis,  
lack of vitality and arthritis

**HOTEL  
WHITCOMB**

World-famous Mineral Baths  
analyzed by leading authori-  
ties and found to contain  
many curative qualities equal  
in medicinal values to those  
of famous European Spas.  
The Whitcomb is located on a  
High Bluff overlooking the lake.  
Completely modern...Every  
facility for rest and recreation.

**ST. JOSEPH...MICHIGAN**

J.T. TOWNSEND Manager

*Say you saw it in AMERICAN ARTISAN—Thank you!*





**SILENTAIR**  
AIR CONDITIONING  
UNITS

THE FAN  
THE WASHER  
THE FILTER

The tremendous success of SILENTAIR AIR CONDITIONING UNITS results, in no small measure, from the fact that they are **MATCHED UNITS**. Easily installed with any warm air furnace they bring splendid profit to dealers and comfort and economy to home owners. Write for descriptive literature.

**A. GEHRI & CO., INC.**  
Factory & Main Office - - - Tacoma, Washington  
Eastern Sales Office & Warehouse, Baltimore Trust Bldg., Baltimore

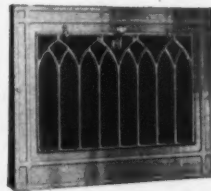


## The One Line that Perfectly Meets EVERY Register Requirement!

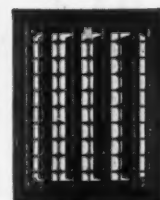
**G**RAVITY type Sidewall and Baseboard Registers of outstanding design and air capacity; floor registers and steel cold air faces with the superior "pinched back" fret-work; the "Pebble Line" of cast faces and semi-steel floor registers; a complete line of Air-Conditioning Registers of thoroughly proven merit; the H & C-HIGHTON Straight-Flow and Volume Control Register for quickly and perfectly balancing large ventilating jobs—all built to the highest standards of quality and workmanship known to the trade.

*Concentrate all your register purchases with the H & C Jobber in your territory and enjoy the benefits of having the best*

*registers on every installation. IT PAYS!*

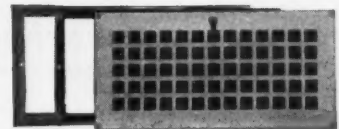


No. 110, 2-piece Baseboard Register (gravity type). A very popular number combining exceptional attractiveness with unusual air capacity.



No. 200 Floor Register. Has larger free area than any other floor register of equal dimensions. Furnished in medium oak grain, or any finish desired.

The new 3-piece construction employed in our No. 3351 Air-Conditioning Sidewall Register (designed to fit flush with the plaster), and our No. 3151 Air-Conditioning Baseboard Register. Our 1-piece Sidewall Register, No. 3350, is designed to overlap the opening. For 1-piece Baseboard Registers specify No. 3150.



## 6 Features that help you sell BURT Revolving Ventilators

- (1) Two sets of high grade Ball or Timken roller bearings—guaranteed not to stick or bind.
- (2) Made from materials 2 to 4 gauges heavier than ordinarily used.
- (3) Open mouth—no louvers to impair efficiency.
- (4) Open back construction to give added pulling power.
- (5) Fully erected and tested before shipped.
- (6) Backed by Burt Guarantee.

**The BURT MFG. Co.**

Ventilators-Oil Filters-Exhaust Heads  
930 S. MAIN ST. AKRON, OHIO

## HART & COOLEY Mfg. Co.

61 W. Kinzie St., Chicago

NEW YORK, 101 Park Ave.  
BOSTON, 75 Portland St.

PHILADELPHIA, 1600 Arch St.  
NEW BRITAIN, Conn.

WM. HIGHTON & SONS DIVISION, NASHUA, N. H.

Factories in Holland, Mich.; New Britain, Conn.; Nashua, N. H.

Registers for all purposes. Also a complete line of perforated and cast ornamental grilles, furnace regulators, dampers, pulleys, chain, and the H & C Automatic Heat Control.

Say you saw it in AMERICAN ARTISAN—Thank you!

## ***NOW! You Can Sell The Heaviest Furnaces Made ---***



### **The U. S. FURNACES**

***"furnaces that make selling easy"***

Our new policy "Exclusive Dealership" has won nation wide approval. Dealers everywhere acclaim the U. S. Franchise as most profitable. It will pay you well to investigate.

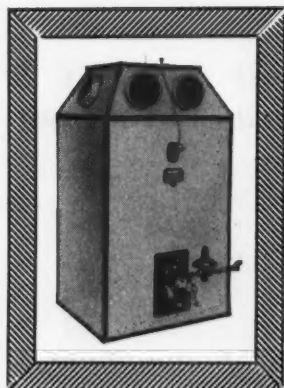
#### **== Many Unusual Features ==**

**DOUBLE JOINTS—NO BOLTS  
NO CEMENT  
ONE PIECE CONE SHAPED  
DEAD CENTER GRATE  
A TEN YEAR GUARANTEE  
ELIMINATION OF ALL DOOR JOINTS**

**WIRE  
WRITE  
OR  
PHONE  
IMMEDIATELY  
FOR  
EXCLUSIVE  
DEALER  
PROPOSITION**

**The United States Furnace Company**  
724 Market Street Youngstown, Ohio

## **NIAGARA GAS FURNACE**



Every wanted feature: high operating efficiency—economy—completely automatic—absolute reliability—handsome appearance—simple, easy assembly and installation—and REPUTATION!

Complete air-conditioning installation when desired.

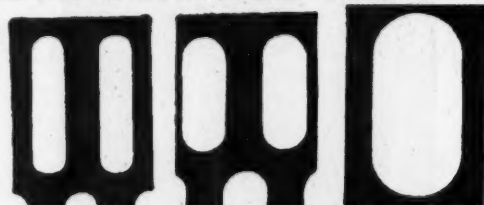
Write for folder No. 25

The Forest City Foundries Company  
2500 W. 27th St., Cleveland, Ohio

# **NIAGARA**

**WARM AIR  
FURNACES**

### **PERFORATED METALS**



All Sizes and Shapes of Holes  
In Steel, Zinc, Brass, Copper, Tinplate, etc.  
For All Screening, Ventilating and Draining  
**EVERYTHING IN PERFORATING METAL**

**THE HARRINGTON & KING PERFORATING CO.**

5649 FILLMORE ST.—CHICAGO, ILL. U. S. A.  
NEW YORK OFFICE, 114 LIBERTY ST.

**THE WORLD'S LARGEST  
MANUFACTURERS OF  
STEEL FURNACES**

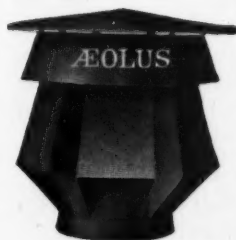
# **LENNOX**

**FURNACE CO., INC.**

MARSHALLTOWN—IOWA  
SYRACUSE—NEW YORK

Install

## ÆOLUS Improved VENTILATORS



FOR industrial buildings, schools, homes, theaters, etc. Made in 14 different metals. Constant ventilation—no noise—no upkeep.

**ÆOLUS DICKINSON**  
Industrial Division of Paul Dickinson, Inc.  
3332-52 South Artesian Avenue  
Chicago, Ill.

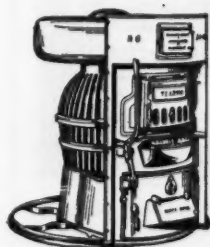
**THE** one direct hook-up between you and your customer is **SYMONDS REGISTERS.**

Say what you will—business originates with the ultimate consumer. Y not know this great business-getting register?

**"It's different than all the rest"**

Write for Our New Catalog—No  
Better Time Than Now

**SYMONDS REGISTER CO.** 3117-23 Minnesota Ave.  
ST. LOUIS, MISSOURI



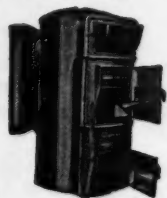
**WHY NOT  
INVESTIGATE**

## Vernois

"better built furnaces"  
heaters—ranges

Mt. Vernon Furnace & Mfg. Co.  
Mt. Vernon, Illinois

## WESTERN



The Western Steel Furnace has made many friends among your prospective customers and will make many more if you show them its numerous advantages.

Write for information

**WESTERN STEEL PRODUCTS CO.**  
130 Commonwealth Ave. Duluth, Minn.

# NOT just another furnace

...but complete air conditioning



Jos. Meyer & Son, Heating Contractors, Buffalo, N. Y., installed a Hess Indoor Climate Control System in this \$100,000 residence. Ground space 3,750 sq. ft.; main part: 17 rooms, 4 baths; servants' quarters: 4 rooms and bath; 3-car garage; basement rooms: kitchen, laundry, serving, reception and ballroom. Cu. ft. of space, 63,000; heat loss, 450,000 B. t. u. hourly.

**THE** flexibility of the Hess Indoor Climate Control System is demonstrated in this unusual installation—a mansion of mammoth proportions. Yet the same identical principles of successful air conditioning for year 'round comfort are applied to the ordinary residence or bungalow.

Hess Systems offer you exceptional opportunities for greater profits and we can help you get the business in your city. For 50 years we have specialized in home heating and ventilating and when you deal with us, you deal with an established firm with a record second to none. The Hess Welded Steel Furnace has made good for half a century because of its proven leak-proof construction.

Write for details of our  
exclusive dealer proposition.

**Hess Warming & Ventilating Company**  
1201-1211 S. Western Ave., Chicago, Ill.  
Branches: Detroit—Milwaukee

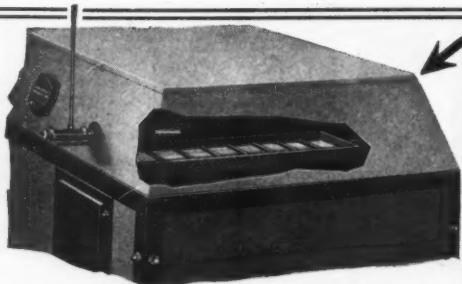
# HESS

## WELDED STEEL FURNACES INDOOR CLIMATE CONTROL SYSTEM

Mention *AMERICAN ARTISAN* in your reply—Thank you!



Entirely  
Different



### AUTOMATIC DRIP HUMIDIFIER

Simple, foolproof, durable and reliable. Entirely different from all others. A Humidifier which offers splendid sales possibilities. *Investigate.*

**AUTOMATIC HUMIDIFIER COMPANY**  
Cedar Falls, Iowa

Our Line  
Light and heavy  
machinery for  
all classes of  
sheet metal,  
plate and  
structural  
work.

MULTIPLE PUNCH  
Capacity 1/2" holes in 1/4" plate

**BERTSCH & CO.**  
Cambridge City, Indiana

## SOOT!

*The Greatest of Heating Troubles*

"Only Original Soot Destroyer" is not an experiment. On the market 20 years. Removes soot, improves draft, keeps homes cleaner, saves fuel. Prepared for stoves, furnaces and industrial boilers.

**LIVE AGENTS WANTED**  
**Saginaw Salt Products Co.**  
Saginaw, Mich.

No. 60

### FURNACE DOOR HANDLE

*Furnished with or without attachment*

THIS is only one of the numerous style handles we make—if this is not the handle you wish please write us and we will send samples of other designs.

**THE FANNER MFG. COMPANY**  
BROOKSIDE PARK Dept. F CLEVELAND

## YOUNG REGULATOR

A Locking and Indicating Device for Air Conditioning and Ventilating Systems

Controls the volume of air flow through duct—the simplest and most effective method of controlling and showing position of volume damper. Positively tamperproof. Made of rust-resisting metals. Exclusive patented features. Write for catalog.

**THE YOUNG VENTILATING CO.**  
2703 Woodland Avenue • Cleveland, Ohio

Sectional view of wall showing damper

## CHICAGO

Box and Pan Brake

Power Squaring Shear

**STEEL BRAKES—PRESSES—SHEARS**

**DREIS & KRUMP MFG. CO.**  
7404 LOOMIS BLVD. CHICAGO

## The Viking Shear

Compound lever handle—removable blades. Upper blade away from mechanic enabling easy following of work—an exclusive Viking feature.

Sold Under a Guarantee—Send for Particulars

**VIKING SHEAR CO., Erie, Pa.**

The "Torrid" Furnace is designed to give a tremendous amount of heat, much more than that furnished by the ordinary tinner's furnace.

A fuel saver and generating machine of the finest quality made at the price.

**GEO. W. DIENER MFG. CO.**  
404 North Monticello Ave. Chicago

Mention AMERICAN ARTISAN in your reply—Thank you!



## SHEETS

For Every  
Purpose

It is the Pure Iron alloyed with the right amount of Copper that gives GOHI SHEETS their lasting and rust-resisting qualities. Developed and manufactured exclusively by

**THE NEWPORT ROLLING MILL COMPANY**  
NEWPORT, KENTUCKY



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This Powerful  
PORTABLE  
ONE MAN  
FURNACE  
CLEANER  
at Your  
Jobbers

**\$135.00**

Complete

**GRAND RAPIDS  
Furnace Cleaner  
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Grand Rapids, Mich.

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**REPUBLIC STEEL  
CORPORATION**

GENERAL OFFICES  YOUNGSTOWN, OHIO

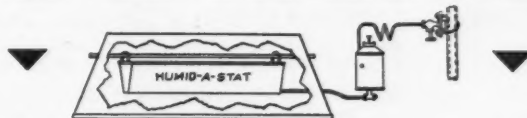


## Miters

Demand  
"Champion" Miters  
and Fittings  
from your  
Jobber!

**Champion  
PRODUCTS**

## CLARM

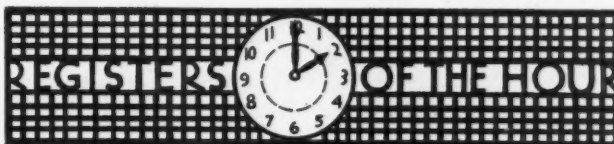


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"They Do the Trick"

The unique design is the Secret Cold Valve operation inside a Water-Sealed Air Chamber. Let us tell you more.

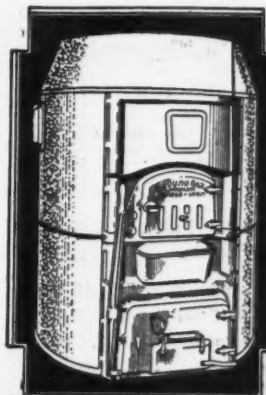
**CLARM MECHANICAL DEVICES COMPANY**  
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There is an AUER Register and Grille for every need—the Colonial, Aueristocrat, Economy, and Pro-Tex-Wall—but the catalog will tell you better. Write for it today.

**AUER REGISTER COMPANY**  
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THE STANDARD  
of Comparison  
are  
PROFIT MAKERS  
for Dealers  
WRITE FOR DETAILS

**ROUND OAK FURNACE CO. DOWAGIAC MICH.**

## FURNACE MANUFACTURERS KNOW "SIMPLEX" VALUES

That's why daily more manufacturers are adopting SIMPLEX as the standard humidifier. It will pay you to investigate.

**SALLADA MANUFACTURING CO.**  
720 South 4th St., Minneapolis, Minn.



"SIMPLEX"  
Truly Automatic—

Say you saw it in *AMERICAN ARTISAN*—Thank you!

# ~ MARKET QUOTATIONS ~

AMERICAN ARTISAN is the only publication quoting Prices on Metals, Sheet Metal Equipment and Supplies, Warm Air Heating Supplies and Accessories, corrected bi-weekly. These quotations are not guaranteed but are obtained from reliable sources and reflect nation-wide market conditions at the time of going to press.

NOTE—These prices are Chicago Warehouse Prices, to which must be added territory differentials

## METALS

### PIG IRON

|                        |         |
|------------------------|---------|
| Chicago Fdy., No. 2    | \$17.00 |
| Southern Fdy., No. 2   | 17.01   |
| Lake Superior Charcoal | 25.04   |
| Malleable              | 17.00   |

### FIRST QUALITY BRIGHT CHARCOAL TIN PLATES

|                     |         |
|---------------------|---------|
| IC 20x28 112 sheets | \$23.80 |
| IX 20x28            | 27.45   |
| IXX 20x28 56 sheets | 14.95   |
| IXXX 20x28          | 16.10   |
| IXXXX 20x28         | 17.85   |

### TERNE PLATES

|                             | Per Box |
|-----------------------------|---------|
| IC 20x28, 40-lb. 112 sheets | \$22.50 |
| IX 20x28, 40-lb. 112 sheets | 25.00   |
| IC 20x28, 25-lb. 112 sheets | 19.60   |
| IX 20x28, 25-lb. 112 sheets | 22.10   |
| IC 20x28, 20-lb. 112 sheets | 18.25   |
| IX 20x28, 20-lb. 112 sheets | 20.75   |

### "ARMCO" INGOT IRON PLATES

|                    |        |
|--------------------|--------|
| No. 8 ga.—110 lbs. | \$4.15 |
| 3/16 in.—100 lbs.  | 4.05   |
| 1/4 in.—100 lbs.   | 3.85   |

### COKE PLATES

|                              |         |
|------------------------------|---------|
| Cokes, 89 lbs., base, 20x28  | \$12.00 |
| Cokes, 90 lbs., base, 20x28  | 12.20   |
| Cokes, 100 lbs., base, 20x28 | 13.75   |
| Cokes, 107 lbs., base, IC    | 12.75   |
| 20x28                        |         |
| Cokes, 135 lbs., base, IX    | 14.75   |
| 20x28                        |         |
| Cokes, 157 lbs., base, 2X    | 8.50    |
| 56 sheets                    |         |
| Cokes, 175 lbs., base, 3X    | 9.35    |
| 56 sheets                    |         |
| Cokes, 195 lbs., base, 4X    | 10.25   |
| 56 sheets                    |         |

### HOT ROLLED ANNEALED SHEETS

|                |                    |
|----------------|--------------------|
| Base 10 ga.    | per 100 lb. \$3.25 |
| "Armco" 10 ga. | per 100 lb. 4.15   |

### HOT ROLLED ANNEALED SHEETS 16 GA. AND HEAVIER

|        |                    |
|--------|--------------------|
| No. 18 | per 100 lb. \$3.25 |
| No. 20 | per 100 lb. 3.35   |
| No. 22 | per 100 lb. 3.45   |
| No. 24 | per 100 lb. 3.55   |
| No. 26 | per 100 lb. 3.65   |
| No. 28 | per 100 lb. 3.70   |
| No. 28 | per 100 lb. 3.80   |

### GALVANIZED

|        |                    |
|--------|--------------------|
| No. 16 | per 100 lb. \$3.70 |
| No. 18 | per 100 lb. 3.80   |
| No. 20 | per 100 lb. 3.90   |
| No. 22 | per 100 lb. 4.00   |

(Standard differentials on extras to apply)

|            |                    |
|------------|--------------------|
| No. 24     | per 100 lb. \$4.10 |
| No. 26     | per 100 lb. 4.35   |
| No. 27     | per 100 lb. 4.45   |
| No. 28     | per 100 lb. 4.60   |
| "Armco" 24 | per 100 lb. 5.75   |

### BAR SOLDER

|                 |                     |
|-----------------|---------------------|
| Warranted 50-50 | per 100 lb. \$19.25 |
| 45-55           | per 100 lb. 17.00   |
| 48-52           | per 100 lb. 17.75   |
| Plumbers'       | per 100 lb. 15.50   |

### ZINC

|          |        |
|----------|--------|
| In Slabs | \$5.00 |
|----------|--------|

### SHEET ZINC

|                       |         |
|-----------------------|---------|
| Cask Lots (600 lbs.)  | \$12.00 |
| Sheet Lots (100 lbs.) | 13.00   |

### BRASS

|                                |          |
|--------------------------------|----------|
| Sheets, Chicago base           | 16 1/2 c |
| Tubing, seamless, Chicago base | 20 1/2 c |
| Wire, Chicago base             | 16 1/2 c |
| Rods, Chicago base             | 13 1/2 c |

## COPPER

|  |          |
|--|----------|
| Sheets, Chicago base                       | 18 1/2 c |
| Tubing, seamless, Chicago base             | 20 1/2 c |
| Wire, plain rd., 8 B. & S. Ga. and heavier | 12 1/2 c |

## LEAD

|              |        |
|--------------|--------|
| American Pig | \$6.00 |
| Bar          | 7.50   |

## TIN

|         |                      |
|---------|----------------------|
| Bar Tin | per 100 lbs. \$33.00 |
| Pig Tin | per 100 lbs. 32.00   |

## SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES

### ASBESTOS

|   |                 |
|---|-----------------|
| Paper up to 1/16                        | 6c per lb.      |
| Roll board                              | 6 1/2 c per lb. |
| Mill board, 3/32 to 1/2                 | 6 1/2 c per lb. |
| Corrugated paper (250 sq. ft. per roll) | \$4.25 per roll |
| Pipe joint tape, per 500 lineal feet    | \$1.50          |

### ASBESTOS SEGMENTS

|        |                    |
|--------|--------------------|
| 8 in.  | per 25 sets \$1.50 |
| 9 in.  | per 25 sets 1.75   |
| 10 in. | per 25 sets 2.00   |
| 12 in. | per 25 sets 2.50   |

### CEMENT, FURNACE

|                  |        |
|------------------|--------|
| 5-lb. cans, net  | \$0.40 |
| 10-lb. cans, net | 0.80   |
| 25-lb. cans, net | 2.00   |
| Per 100 lbs.     | 7.50   |

## CLIPS

|   |        |
|---|--------|
| Damper                                      |        |
| No-Rivet Steel, with tail pieces, per gross | \$8.25 |
| Rivet Steel, with tail pieces, per gross    | 7.50   |
| Tail pieces, per gross                      | 2.00   |

### COPPER FOOTING

|                |     |
|----------------|-----|
| Copper Footing | 43% |
|----------------|-----|

### CORNICE BRAKES

|                       |     |
|-----------------------|-----|
| Chicago Steel Bending |     |
| Nos. 1 to 6B.         | Net |

### CUT-OFFS

|                               |     |
|-------------------------------|-----|
| Gal. plain, round or cor. rd. |     |
| 26 gauge                      | 30% |
| 28 gauge                      | 35% |

### DAMPERS

|                 |        |
|-----------------|--------|
| Yankee Warm Air |        |
| 7 in., doz.     | \$1.60 |
| 8 in., doz.     | 2.20   |
| 9 in., doz.     | 2.60   |
| 10 in., doz.    | 2.80   |
| 12 in., doz.    | 3.50   |
| 14 in., doz.    | 6.00   |

### EAVES TROUGH

|                         |        |
|-------------------------|--------|
| Galv. Crimpedge, crated | 75-15% |
| Zinc                    | 60%    |

### ELBOWS

|  |        |
|--|--------|
| Conductor Pipe                               |        |
| Galv. plain or corrugated, round flat Crimp. |        |
| 28 gauge                                     | 60-10% |
| 26 gauge                                     | 50%    |
| 24 gauge                                     | 15%    |

### Galvanized Terne Steel

|                         |        |
|-------------------------|--------|
| Plain Rd. and Rd. Corr. |        |
| 28 gauge                | 60-10% |
| 26 gauge                | 50%    |
| 24 gauge                | 15%    |

## Square Corrugated

|          |     |
|----------|-----|
| 28 gauge | 55% |
| 26 gauge | 40% |

## Portico Elbows

|   |         |
|---|---------|
| Standard Gauge Conductor Pipe, plain or corrugated. |         |
| Not nested  | 70 & 5% |
| Nested solid  | 70 & 5% |

## Sq. Corr., A. & B. & Octagon

|          |     |
|----------|-----|
| 28 gauge | 55% |
| 26 gauge | 40% |

## Portico

|                      |     |
|----------------------|-----|
| 1, 1 1/4, 1 1/2 inch | 45% |
|----------------------|-----|

## Copper

|                     |     |
|---------------------|-----|
| 16 oz., all designs | 50% |
|---------------------|-----|

## Zinc

|            |     |
|------------|-----|
| All styles | 60% |
|------------|-----|

### ELBOWS—Stove Pipe

|                                  |        |
|----------------------------------|--------|
| 1-piece Corrugated, Uniform Blue |        |
| No. 28 Gauge.                    | Doz.   |
| 5 inch                           | \$1.15 |
| 6 inch                           | 1.21   |
| 7 inch                           | 1.75   |

### Adjustable—Uniform Blue

|                             |        |
|-----------------------------|--------|
| No. 28 Gauge, Uniform Blue. |        |
| 5 inch                      | \$1.60 |
| 6 inch                      | 1.75   |
| 7 inch                      | 2.10   |

### WOOD FACES—60% off list.

## FIRE POTS

|   | Each    |
|---|---------|
| No. 02 Gasoline Torch, 1 qt.                | \$ 5.13 |
| No. 9250, Kerosene or Gasoline Torch, 1 qt. | 6.50    |
| No. 10 Tinner's Furnace Square tank, 1 gal. | 11.20   |
| No. 15 Tinner's Furnace Round tank, 1 gal.  | 10.70   |
| No. 21 Gas Soldering Furnace.               | 3.60    |
| No. 110 Automatic Gas Soldering Furnace     | 10.50   |

## GLASS

|   |     |
|---|-----|
| Single and Double Strength, A, all brackets | 85% |
| Single and Double Strength, B, all brackets | 87% |

## HANGERS

|                        |     |
|------------------------|-----|
| Conductor Pipe         |     |
| Milcor Perfection Wire | 25% |
| Milcor Triplex Wire    | 10% |

## Eaves Trough

|  |     |
|--|-----|
| Steel (galv. after forming), from list | 45% |
| Selflock E. T. Wire, List              | 10% |

## HOOKS

|  |     |
|--|-----|
| Conductor                                      |     |
| "Direct Drive" Wrought Iron, for wood or brick | 15% |

## MITRES

|                         |        |
|-------------------------|--------|
| Galvanized Steel Mitres |        |
| 28 gauge                | 70-15% |
| 26 gauge                | 70-5%  |

## PASTE

### Asbestos Dry Paste

|                |         |
|----------------|---------|
| 200-lb. barrel | \$15.00 |
| 100-lb. barrel | 7.75    |
| 50-lb. pail    | 4.50    |
| 25-lb. pail    | 2.50    |
| 10-lb. bag     | 1.20    |
| 5-lb. bag      | .60     |

## Galvanized

|                                    |            |
|------------------------------------|------------|
| Crated and nested (all gauges)     | 75-12 1/2% |
| Crated and not nested (all gauges) | 75-7 1/2%  |

## Furnace Pipe

|   |     |
|---|-----|
| Double Wall Pipe and Fittings           | 60% |
| Single Wall Pipe, Round Galvanized Pipe | 60% |
| Galvanized and Tin Fittings             | 60% |

## Lead

|                                  |         |
|----------------------------------|---------|
| Per 100 lbs.                     | \$12.50 |
| Stove Pipe                       |         |
| "Milcor" "Titelock" Uniform Blue |         |

|                        |         |
|------------------------|---------|
| Stove                  |         |
| 28 gauge, 5 inch U. C. |         |
| 28 gauge, 6 inch U. C. | \$10.00 |
| 28 gauge, 7 inch U. C. | 11.00   |
| 30 gauge, 5 inch U. C. | 13.00   |
| 30 gauge, 6 inch U. C. | 9.25    |
| 30 gauge, 7 inch U. C. | 10.00   |
| 30 gauge, 7 inch U. C. | 12.00   |

## T-Joint Made Up

|                  |                 |
|------------------|-----------------|
| 6-inch, 28 gauge | per doz. \$3.40 |
|------------------|-----------------|

## REGISTERS AND FACES

|                      |          |
|----------------------|----------|
| Floor Registers      |          |
| Steel and Semi-Steel | 40 & 10% |
| All Cast Iron        | 20%      |

## Baseboard

|         |             |
|---------|-------------|
| 2-Piece | 40 & 10%    |
| 1-Piece | 40-10 & 20% |

## Adjustable Ventilators

|                        |          |
|------------------------|----------|
| Adjustable Ventilators | 40 & 10% |
|------------------------|----------|

## COLD AIR FACES

|                                       |          |
|---------------------------------------|----------|
| Steel and Cast, less than 14" width   | 40 & 10% |
| Steel, 14" and wider                  | 65 & 10% |
| Cast, 14" and wider                   | 60 & 10% |
| Special Cold Air Faces, Steel or Cast | 40 & 10% |

## RIDGE ROLL

|                                |          |
|--------------------------------|----------|
| Galv. Plain Ridge Roll, b'd'd  | 75-15-5% |
| Galv. Plain Ridge Roll, crated | 75-15%   |

## SCREWS

|                              |        |
|------------------------------|--------|
| Sheet Metal                  |        |
| 7, 1/2 x 1/2, per gross      | \$0.52 |
| No. 10, 1/2 x 1/2, per gross | 0.68   |
| No. 14, 1/2 x 1/2, per gross | 0.88   |

## SHEARS, TINNERS' AND MACHINISTS'

|  |         |
|--|---------|
| Viking                                   | \$22.00 |
| Lennox Throatless                        |         |
| No. 18                                   | 35%     |
| Shear blades (F.o.b. Marshalltown, Iowa) | 10%     |

## SHOES

|   |        |
|---|--------|
| Galv. 28 Gauge, Plain or Corrugated, round flat crimp | 60-10% |
| 26 gauge, round flat crimp                            | 50%    |
| 24 gauge, round flat crimp                            | 15%    |

## SNIPS

|          |     |
|----------|-----|
| Tinners' | Net |
|----------|-----|

## VENTILATORS

|          |           |
|----------|-----------|
| Standard | 30 to 40% |
| Milcor   | Net       |



# ASBESTOS PRODUCTS

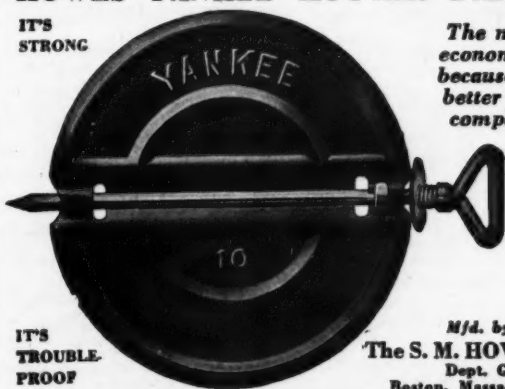
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economical  
because it's  
better and  
complete*

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TROUBLE  
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Mfd. by  
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JOB  
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CEMENT

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## THE RIVAL!

### EAVES TROUGH HANGER

A heavy, easily ad-  
justed hanger made in  
four sizes, 4", 4½", 5"  
and 6", and of copper or  
galvanized iron. Each  
hanger is subjected to a  
most rigid inspection so  
that uniform quality is  
assured at all times.

They are shipped in  
compact heavy corruga-  
ted cardboard cartons.

If you are interested in  
rigid construction, quick,  
easy adjustment, sure  
locked bead, and low  
price, then order The  
"Rival."

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4B

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Drop Forged—Parts Heat Treated—Punches and Dies  
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Power—¼ inch through 16 Gauge.

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Give Perfect Balance.

Weight—3 pounds.

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Independent Air Filter Co., Chicago, Ill.  
Kleenaire Filter Co., Stevens Point, Wis.  
Lakeside Co., Hermansville, Mich.  
Meyer & Bro., F., Peoria, Ill.
- Air Washers**  
American Machine Products Co., Marshalltown, Iowa  
Brundage Co., Kalamazoo, Mich.  
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Health Air Systems, Ann Arbor, Mich.  
Hess Warming & Vent. Co., Chicago, Ill.  
Lakeside Co., Hermansville, Mich.  
Menominee Air Washer Co., Menominee, Mich.
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- Blast Gates**  
Berger Bros. Co., Philadelphia, Pa.
- Blowers**  
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American Machine Products Co., Marshalltown, Iowa  
Brundage Co., Kalamazoo, Mich.  
Emerson Elec. Mfg. Co., St. Louis, Mo.  
A. Gehrl & Co., Tacoma, Wash.  
Health-Air Systems, Ann Arbor, Mich.  
Hess Warming & Vent. Co., Chicago, Ill.  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Lakeside Co., Hermansville, Mich.  
Menominee Air Washer Co., Menominee, Mich.  
Warm Air Furnace Fan Co., Cleveland, Ohio
- Brakes—Bending**  
Dreis & Krump Mfg. Co., Chicago, Ill.  
Interstate Machinery Co., Chicago, Ill.  
Peck, Stow & Wilcox Co., Southington, Conn.
- Brakes—Cornice**  
Dreis & Krump Mfg. Co., Chicago, Ill.
- Brass and Copper**  
American Brass Co., Waterbury, Conn.  
Revere Copper and Brass Inc., Rome, N. Y.
- Cans—Garbage**  
Diener Mfg. Co., G. W., Chicago, Ill.
- Castings—Malleable**  
Fanner Mfg. Co., Cleveland, Ohio
- Ceilings—Metal**  
Globe Iron Roofing and Corrugating Co., Cincinnati, Ohio  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.
- Chaplets**  
Fanner Mfg. Co., Cleveland, Ohio
- Cleaners—Vacuum**  
(See Furnace Cleaners)
- Conductor Elbows and Shoes**  
Acme Tin Plate & Rfg. Supply Co., Philadelphia, Pa.  
Barnes Metal Products Co., Chicago, Ill.  
Berger Bros. Co., Philadelphia, Pa.  
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.
- Conductor Fittings**  
Acme Tin Plate & Rfg. Supply Co., Philadelphia, Pa.  
Barnes Metal Products Co., Chicago, Ill.  
Berger Bros. Co., Philadelphia, Pa.  
Braden Mfg. Co., Terre Haute, Ind.  
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio  
David Levow, New York, N. Y.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Rival Strap Corp., New York, N. Y.
- Conductor Pipe**  
Acme Tin Plate & Rfg. Supply Co., Philadelphia, Pa.  
Barnes Metal Products Co., Chicago, Ill.  
Berger Bros. Co., Philadelphia, Pa.  
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.
- Copper**  
American Brass Co., Waterbury, Conn.  
Revere Copper & Brass Inc., Rome, N. Y.
- Cornices**  
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.
- Crimping Machines**  
Bertsch & Co., Cambridge City, Ind.  
Yoder Co., The Cleveland, Ohio
- Cut-offs—Rain Water**  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.
- Dampers—Quadrants—Accessories**  
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Aeolus Dickinson, Chicago, Ill.  
Hart & Cooley Co., Holland, Mich.  
Howes Co., S. M., Boston, Mass.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Parker-Kalon Corp., New York, N. Y.  
Young Ventilating Co., Cleveland, Ohio
- Dampproofings**  
Lastik Products Corp., Pittsburgh, Pa.
- Diffusers—Air Duct**  
Aeolus Dickinson, Chicago, Ill.
- Draft Stabilizers**  
Silent Automatic Corp., Detroit, Mich.
- Drive Screws—Hardened Metallic**  
Parker-Kalon Corp., New York
- Eaves Trough**  
Acme Tin Plate & Rfg. Supply Co., Philadelphia, Pa.  
Barnes Metal Products Co., Chicago, Ill.  
Berger Bros. Co., Philadelphia, Pa.  
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.
- Eaves Trough Hangers**  
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Berger Bros. Co., Philadelphia, Pa.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.
- Fans—Exhaust**  
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- Fans—Ventilating**  
Emerson Elec. Mfg. Co., St. Louis, Mo.
- Fluxes—Soldering**  
Kester Solder Co., Chicago, Ill.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
- Forming Rolls**  
Bertsch & Co., Cambridge City, Ind.  
Interstate Machinery Co., Chicago, Ill.
- Furnace Cement**  
Connors Paint Mfg. Co., Wm., Troy, N. Y.  
Lastik Products Corp., Pittsburgh, Pa.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Technical Products Co., Pittsburgh, Pa.
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Hart & Cooley Co., Holland, Mich.
- Furnace Cleaners—Suction**  
Baker Furnace Co., Toledo, Ohio  
Brillion Furnace Co., Brillion, Wis.  
Denamore & Quinlan Co., Kenosha, Wis.  
Grand Rapids Furnace Cleaner Co., Grand Rapids, Mich.
- Furnace Door Handles**  
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- Furnace Fans**  
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American Fdy. & Furnace Co., Bloomington, Ill.  
Emerson Electric Mfg. Co., St. Louis, Mo.  
A. Gehrl & Co., Tacoma, Wash.  
Warm Air Furnace Fan Co., Cleveland, Ohio
- Furnace Filters**  
A. Gehrl & Co., Tacoma, Wash.  
Independent Air Filter Co., Chicago, Ill.  
Kleenaire Filter Co., Stevens Point, Wis.  
Lakeside Co., Hermansville, Mich.
- Furnace Pipe and Fittings**  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Meyer & Bro., F., Peoria, Ill.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Osborn Co., The J. M. & L. A., Cleveland, Ohio  
Peerless Foundry Co., Indianapolis, Ind.  
Williamson Heater Co., Cincinnati, Ohio
- Furnace Pokers**  
Fanner Mfg. Co., Cleveland, Ohio  
Independent Reg. & Mfg. Co., Cleveland, Ohio
- Furnace Pulleys**  
Hart & Cooley Co., Holland, Mich.
- Furnace Regulators**  
Hart & Cooley Co., Holland, Mich.  
Lakeside Co., Hermansville, Mich.  
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.  
Modern Heat Regulator Co., Cleveland, Ohio  
White Mfg. Co., Minneapolis, Minn.
- Furnace Rings**  
Forest City Foundries Co., Cleveland, Ohio
- Furnace and Stove Repairs**  
A. G. Brauer Supply Co., St. Louis  
Des Moines Stove Repair Co., Des Moines, Iowa  
Northwestern Stove Repair Co., Chicago  
Peerless Fdry. Co., Indianapolis, Ind.
- Furnaces for Gas or Oil**  
Dall Steel Products Co., Lansing, Mich.  
Health-Air Systems, Ann Arbor, Mich.
- Furnaces—Gas**  
American Fdy. & Furnace Co., Bloomington, Ill.  
American Furnace Co., St. Louis, Mo.  
Henry Furnace & Foundry Co., Cleveland, Ohio  
Lennox Furnace Co., Marshalltown, Iowa  
Meyer Furnace Co., Peoria, Ill.  
Payne Furnace and Supply Co., Beverly Hills, Calif.  
Round Oak Furnace Co., Dowagiac, Mich.  
Western Steel Products Co., Duluth, Minn.  
Wise Furnace Co., Akron, Ohio
- Furnaces—Gas Auxiliary**  
Forest City Foundries Co., Cleveland, Ohio
- Furnaces—Oil Burning**  
Motor Wheel Corp., Heater Div., Lansing, Mich.
- Furnaces—Warm Air**  
(See Also Unit Air Conditioners)  
Acme Tin Plate & Rfg. Supply Co., Philadelphia, Pa.  
Agricola Furnace Co., Gadsden, Ala.  
American Fdy. & Furnace Co., Bloomington, Ill.  
American Furnace & Fdy. Co., Milan, Mich.  
American Furnace Co., St. Louis, Mo.  
Armstrong Furnace Co., Columbus, O.  
Brillion Furnace Co., Brillion, Wis.  
Dall Steel Products Co., Lansing, Mich.  
Deshler Foundry & Machine Works, Deshler, Ohio  
Enterprise Boiler & Tank Works, Chicago, Ill.  
Forest City Foundries Co., Cleveland, Ohio  
General Heating Co., St. Paul, Minn.  
Graff Furnace Co., Scranton, Pa.  
Hall-Neal Furnace Co., Indianapolis, Ind.  
Health-Air Systems, Ann Arbor, Mich.  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Hess Warming & Vent. Co., Chicago, Ill.  
Lennox Furnace Co., Marshalltown, Iowa  
Liberty Foundry Co., St. Louis, Mo.  
May Fieberger Furnace Co., Newark, Ohio  
Meyer Furnace Co., The Peoria, Ill.  
Midland Furnace Co., Cleveland, Ohio  
Motor Wheel Corp., Heater Div., Lansing, Mich.  
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.  
Payne Furnace & Supply Co., Beverly Hills, Calif.  
Peerless Foundry Co., Indianapolis, Ind.  
Premier Warm Air Heater Co., Dowagiac, Mich.  
Round Oak Furnace Co., Dowagiac, Mich.  
Rybolt Heater Co., Ashland, Ohio  
Schwab Furnace & Mfg. Co., Cedar Grove, Wis.  
U. S. Furnace Co., Youngstown, Ohio  
Waterman-Waterbury Co., Minneapolis, Minn.  
Western Steel Products Co., Duluth, Minn.  
Williamson Heater Co., Cincinnati, O.  
Wise Furnace Co., Akron, Ohio
- Grilles**  
Auer Register Co., Cleveland, Ohio  
Chicago Perforating Co., Chicago, Ill.  
Harrington & King Perforating Co., Chicago, Ill.  
Hart & Cooley Mfg. Co., Chicago, Ill.  
Independent Register & Mfg. Co., Cleveland, Ohio  
U. S. Register Co., Battle Creek, Mich.
- Guards—Machine and Belt**  
Chicago Perforating Co., Chicago, Ill.  
Harrington & King Perforating Co., Chicago, Ill.
- Handles—Boiler**  
Berger Bros. Co., Philadelphia, Pa.
- Handles—Soldering Iron**  
Parker-Kalon Corp., New York, N. Y.
- Heat Regulators**  
Hart & Cooley Mfg. Co., Chicago, Ill.  
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.  
Modern Heat Regulator Co., Cleveland, Ohio  
White Mfg. Co., Minneapolis, Minn.
- Heaters—Cabinet**  
Agricola Furnace Co., Gadsden, Ala.  
Motor Wheel Corp., Heater Division, Lansing, Mich.  
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.  
Payne Furnace & Supply Co., Beverly Hills, Calif.  
Premier Warm Air Heater Co., Dowagiac, Mich.  
Waterman-Waterbury Co., Minneapolis, Minn.
- Heaters—School Room**  
Meyer Furnace Co., The Peoria, Ill.  
Waterman-Waterbury Co., Minneapolis, Minn.  
Western Steel Products Co., Duluth, Minn.
- Humidifiers**  
Automatic Humidifier Co., Cedar Falls, Iowa  
Clarm Mechanical Devices Co., Lima, Ohio  
Columbus Humidifier Co., Columbus, Ohio  
Diener Mfg. Co., G. W., Chicago, Ill.  
Hess Warming & Vent. Co., Chicago, Ill.  
Menominee Air Washer Co., Menominee, Mich.  
Meyer & Bro. Co., F., Peoria, Ill.  
Sallada Mfg. Co., Minneapolis, Minn.

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Interstate Machinery Co., Chicago, Ill.**Machinery—Rebuilt**

Interstate Machinery Co., Chicago, Ill.

**Machines and Tools—Tinsmith's**Bertach & Co., Cambridge City, Ind.  
Dreis & Krump Mfg. Co., Chicago, Ill.  
Interstate Machinery Co., Chicago, Ill.  
Marshalltown Mfg. Co., Marshalltown, Iowa  
Niagara Mach. & Tool Wks., Buffalo, N. Y.  
Parker-Kalon Corp., New York, N. Y.  
Peck, Stow & Wilcox Co., Southington, Conn.  
Viking Shear Co., Erie, Pa.  
Whitney Mfg. Co., W. A., Rockford, Ill.  
Yoder Co., The, Cleveland, Ohio**Metal Lath—Expanded**Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.**Miters**Barnes Metal Products Co., Chicago, Ill.  
Berger Bros. Co., Philadelphia, Pa.  
Braden Mfg. Co., Terre Haute, Ind.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.**Motors—Electric**

Emerson Elec. Mfg. Co., St. Louis, Mo.

**Nails—Hardened Masonry**

Parker-Kalon Corp., New York, N. Y.

**Oil Burners**Laco Oil Burner Co., Griswold, Iowa  
Northern Oil Burners Inc., Minneapolis, Minn.  
Silent Automatic Corp., Detroit, Mich.**Paint**

Connors Paint Mfg. Co., Wm., Troy, N. Y.

**Perforated Metals**Chicago Perforating Co., Chicago  
Harrington & King Perforating Co., Chicago, Ill.**Punches**Bertach & Co., Cambridge City, Ind.  
Interstate Machinery Co., Chicago, Ill.  
Parker-Kalon Corp., New York, N. Y.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.  
W. A. Whitney Mfg. Co., Rockford, Ill.**Punches—Combination Bench and Hand**

Parker-Kalon Corp., New York, N. Y.

**Punches—Hand**Parker-Kalon Corp., New York, N. Y.  
W. A. Whitney Mfg. Co., Rockford, Ill.**Putty-Stove**

Connors Paint Mfg. Co., Wm., Troy, N. Y.

**Radiator Cabinets**

Hart &amp; Cooley Mfg. Co., New Britain, Conn.

**Registers—Warm Air**Auer Register Co., Cleveland, Ohio  
Forest City Foundries Co., Cleveland, Ohio  
Hart & Cooley Co., Cleveland, Ohio  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Independent Register & Mfg. Co., Cleveland, Ohio  
Meyer & Bro., F., Peoria, Ill.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.  
Rock Island Register Co., Rock Island, Ill.  
Symonds Register Co., St. Louis, Mo.  
United States Register Co., Battle Creek, Mich.**Registers—Wood**Auer Register Co., Cleveland, Ohio  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.**Repairs—Stove and Furnace**Brauer Supply Co., A. G., St. Louis, Mo.  
Des Moines Stove Repair Co., Des Moines, Iowa  
Northwestern Stove Repair Co., Chicago, Ill.  
Peerless Fdry. Co., Indianapolis, Ind.**Ridging**Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.**Roofing Cement**Connors Paint Mfg. Co., Wm., Troy, N. Y.  
Lastik Products Corp., Pittsburgh, Pa.**Roof Flashing**Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.**Roof Paints**

Connors Paint Mfg. Co., Wm., Lastik Products Corp., Pittsburgh, Pa.

**Roofing—Iron and Steel**Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio  
Inland Steel Co., Chicago, Ill.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.  
Newport Rolling Mill Co., The, Newport, Ky.  
Republic Steel Corp., Youngstown, Ohio**Roofing—Tin and Terne**Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.  
Republic Steel Corp., Youngstown, Ohio**Rubbish Burners**

Hart &amp; Cooley Mfg. Co., New Britain, Conn.

**School—Sheet Metal Pattern Drafting**

St. Louis Technical Institute, St. Louis, Mo.

**Schools—Warm Air Heating**

St. Louis Technical Institute, St. Louis, Mo.

**Screws—Hardened Metallic Drive**Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.  
Parker-Kalon Corp., 200 Varick St., New York**Screws—Hardened Self-Tapping, Sheet Metal**Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.  
Parker-Kalon Corp., New York**Screens—Perforated Metal**Chicago Perforating Co., Chicago, Ill.  
Harrington & King Perforating Co., Chicago, Ill.**Scuppers**

Aeolus Dickinson, Chicago, Ill.

**Shears—Hand and Power**Interstate Machinery Co., Chicago, Ill.  
Marshalltown Mfg. Co., Marshalltown, Iowa  
Niagara Mach. & Tool Wks., Buffalo, N. Y.  
Peck, Stow & Wilcox Co., Southington, Conn.  
Viking Shear Co., Erie, Pa.  
Yoder Co., The, Cleveland, Ohio**Sheet Metal Screws—Hardened, Self-Tapping**

Parker-Kalon Corp., New York

**Sheets—Alloy**Inland Steel Co., Chicago, Ill.  
International Nickel Co., New York, N. Y.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.  
Newport Rolling Mill Co., Newport, Ky.  
Republic Steel Corp., Youngstown, Ohio**Sheets—Black and Galvanized**Granite City Steel Co., Granite City, Ill.  
Inland Steel Co., Chicago, Ill.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.  
Newport Rolling Mill Co., Newport, Ky.  
Republic Steel Corp., Youngstown, Ohio**Sheets—Copper**American Brass Co., Waterbury, Conn.  
Revere Copper & Brass Inc., Rome, N. Y.**Sheets—Iron**Granite City Steel Co., Granite City, Ill.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.  
Newport Rolling Mill Co., Newport, Ky.  
Republic Steel Corp., Youngstown, Ohio**Sheets—Copper Bearing Steel**Inland Steel Co., Chicago, Ill.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.  
Newport Rolling Mill Co., Newport, Ky.  
Republic Steel Corp., Youngstown, Ohio**Sheets—Nickel**

International Nickel Co., New York

**Sheets—Pure Iron Copper Alloy**

Newport Rolling Mill Co., Newport, Ky.

**Sheets—Special Finish**Inland Steel Co., Chicago, Ill.  
Newport Rolling Mill Co., Newport, Ky.  
Republic Steel Corp., Youngstown, Ohio**Shingles and Tile—Metal**Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.**Skylights**Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.**Snips**Peck, Stow & Wilcox Co., Southington, Conn.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.**Snow Guards**Berger Bros. Co., Philadelphia, Pa.  
David Levow, New York, N. Y.  
Rival Strap Corp., New York, N. Y.**Solder**Kester Solder Co., Chicago, Ill.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.**Solder—Acid Core**Kester Solder Co., Chicago, Ill.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.**Solder—Rosin Core**

Kester Solder Co., Chicago, Ill.

**Solder—Self-Fluxing**Kester Solder Co., Chicago, Ill.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.**Soldering Furnaces**Diener Mfg. Co., G. W., Chicago, Ill.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.**Soot Destroyer**

Saginaw Salt Prod. Co., Saginaw, Mich.

**Specialties—Hardware**

Diener Mfg. Co., G. W., Chicago, Ill.

**Stars—Hard Iron Cleaning**

Fanner Mfg. Co., Cleveland, Ohio

**Stove Pipe and Fittings**Meyer & Bro. Co., F., Peoria, Ill.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.**Stove and Furnace Trimmings**

Fanner Mfg. Co., Cleveland, Ohio

**Strainers—Roof**David Levow, New York, N. Y.  
Rival Strap Corp., New York, N. Y.**Straps—Ornamental Pipe**David Levow, New York, N. Y.  
Rival Strap Corp., New York, N. Y.**Tinplate**Granite City Steel Co., Granite City, Ill.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.  
Republic Steel Corp., Youngstown, Ohio**Tools—Tinsmith's**

(See Machines—Tinsmith's)

**Torches**Diener Mfg. Co., G. W., Chicago, Ill.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.**Unit Air Conditioners**Armstrong Furnace Co., Columbus, Ohio  
American Fdry. & Furnace Co., Bloomington, Ill.  
American Furnace Co., St. Louis, Mo.  
Dall Steel Products Co., Lansing, Mich.  
Henry Furnace & Fdry. Co., Cleveland, Ohio  
Health-Air Systems, Ann Arbor, Mich.  
Hess Warming & Ventilating Co., Chicago, Ill.  
Lennox Furnace Co., Marshalltown, Iowa  
May-Fieberger Co., Newark, Ohio  
Meyer Furnace Co., Peoria, Ill.  
Midland Furnace Co., Columbus, Ohio  
Motor Wheel Corp., Lansing, Mich.  
Payne Furnace & Supply Co., Beverly Hills, Calif.  
Waterman-Waterbury Co., Minneapolis, Minn.  
Williamson Heater Co., Cincinnati, Ohio**Vacuum Cleaners—Furnace****(See Furnace Cleaners)**Baker Furnace Co., Toledo, Ohio  
Brillion Furnace Co., Brillion, Wis.  
Densmore & Quinlan Co., Kenosha, Wis.**Ventilators—Ceiling**Hart & Cooley Co., New Britain, Conn.  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Independent Reg. & Mfg. Co., Cleveland, Ohio**Ventilators—Floor**

Aeolus Dickinson, Chicago, Ill.

**Ventilators—Roof**Aeolus Dickinson, Chicago, Ill.  
Berger Bros. Co., Philadelphia, Pa.  
Burt Mfg. Co., Akron, Ohio  
Jordan & Co., Paul R., Indianapolis, Ind.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.**Water Pressure Regulators**

Apex Regulator Co., Marshalltown, Iowa

**Wood Faces—Warm Air**Auer Register Co., Cleveland, Ohio  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.

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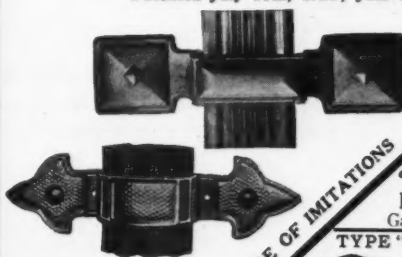
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| Globe Iron Roofing & Corrugating Co.*..... | ---         | Sternaman*.....  | ---    |
| Graff Furnace Co.*.....                    | ---         | Symonds Register Co.*.....   | 39     |
| Granite City Steel Co.*.....               | ---         | Technical Products Co.*.....   | ---    |
| Grand Rapids Furnace Cleaner Co.....       | 41          | Time-O-Stat Controls, Div. Minneapolis-Honeywell Regulator Co.*..... | ---    |
| Hall-Neal Furnace Co.*.....                | ---         | Tuttle & Bailey Mfg. Co.*.....                                       | ---    |
| Harrington & King Perf. Co.....            | 38          | United States Furnace Co.....  | 38     |
| Hart & Cooley Mfg. Co.....                 | 36 & 37     | United States Register Co.*.....                                     | ---    |
| Health-Air Systems.....                    | 45          | Viking Shear Co.....   | 40     |
| Henry Furn. & Fdy. Co.....                 | 2           | Warm Air Furnace Fan Co.*.....                                       | ---    |
| Hess Warming & Ventilating Co.....         | 39          | Waterman-Waterbury Co.....   | 45     |
| Howes Co., S. M.....                       | 43          | Watt Mfg. Co.*.....  | ---    |
| Independent Air Filter Co.*.....           | ---         | Western Steel Products Co.....                                       | 39     |
| Independent Reg. & Mfg. Co.*.....          | ---         | Whitcomb Hotel.....  | 36     |
| Inland Steel Co.....                       | 8           | White Mfg. Co.....   | 35     |
| International Nickel Co.....               | 3           | Whitney Mfg. Co., W. A.....  | 43     |
| Interstate Machinery Co.....               | 49          | Williamson Heater Co.*.....  | ---    |
| Jordan & Co., Paul R.....                  | 36          | Wilson, Grant, Inc.....  | 43     |
| Kester Solder Co.*.....                    | ---         | Wise Furnace Co.....   | 7      |
| Kleenaire Filter Co.*.....                 | ---         | Yoder Co., The*.....   | ---    |
|  |             | Young Ventilating Co., The.....                                      | 40     |

THE BUYERS' DIRECTORY APPEARS ON PAGES 44 AND 46



# Classified Advertising

## BUSINESS CHANCES

**Lightning Rods**—Dealers who are selling Lightning Protection will make money by writing to us for our latest Factory to Dealer Prices. We employ no salesmen and save you all overhead charges. Our Pure Copper Cable and Fixtures are endorsed by the National Board of Fire Underwriters and hundreds of dealers. Write today for samples and prices. L. K. Diddle Company, Marshfield, Wis.

For Sale—Owner of widely known sheet metal shop wants working partner with ten or twelve thousand dollars to invest. Clean, well-established shop doing good business, no indebtedness, and ideal location. For years we have specialized in making and shipping skylights, ventilators, all steel marquees, etc. Owner has thorough knowledge of the business. Partner must also be an expert sheet metal worker. Owner can prove that half interest in this plant is a sound and low priced investment. Those without the above mentioned finance, knowledge and ability need not answer. Address Z-541, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

## MANUFACTURERS

of blowers, humidifiers, stokers, air filters, controls, steel furnaces, and allied products; do you want representation by a group of men for many years prominently connected with a heater manufacturing company and well and favorably known in the trade? Write fully to K-542, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

For Sale—90 ft. frontage on Broadway, 113 ft. depth. Just 200 ft. from the well patronized Lewis-Clark Bridge. Reason for selling, old age. Address Eckhard Mercantile Company, 512 East Broadway, Alton, Illinois. B-542

## SPECIALTIES WANTED

Manufacturer with salesmen calling on the wholesale trade can handle several good sheet metal and furnace specialties to advantage. Address

L-542, AMERICAN ARTISAN  
139 N. Clark Street Chicago, Illinois

Wanted—Patent on gas warm air furnace, either outright or on royalty basis. Send full details to W-541, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

## HELP WANTED

### WANTED

A furnace man to take charge of sales for an old established company manufacturing and selling well known cast and steel furnaces. State experience and references. Address J-542, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

### WANTED

Salesmen for Illinois, Michigan, Indiana, Ohio, Missouri and eastern states. Must be well recommended and acquainted with the heating trade. Address in confidence

Box F-542, AMERICAN ARTISAN  
139 North Clark St. Chicago, Ill.

## SITUATION WANTED

**Situation Wanted**—By married man as sheet metal worker and plumber. Can handle heating of all kinds. Can estimate and figure jobs. Nothing but steady job considered. No Boozer. Address P-541, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

**Situation Wanted**—By sheet metal man of twenty years experience. Have held positions of Superintendent and Executive in large firms. Thoroughly competent in general jobbing, furnace work, oil heating, factory work, manufacturing of furnace fittings, metal stamping, and sales work. College education. Only high class proposition with reliable firm considered. Location no object. Address R-541, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

**Situation Wanted**—By a reliable sheet metal worker. Will go anywhere and will take job for a long or short period of time. Have had thirty years experience on cornice, skylight, blow pipe, and general jobbing. Am considered a first class layout man and am a good estimator. Have handled men and done layout and estimating for the past 15 years. Am willing to take any job you can give me. Address L-541, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

**Situation Wanted**—By a first class sheet metal mechanic, one who is steady and understands the business thoroughly, having spent 25 years at this trade. Can handle anything that comes up in a sheet metal shop from estimating to the finish. Can go anywhere. Address Edward Collins, 154 Oakland Avenue, Macon, Georgia. G-542

**Situation Wanted**—Permanent connection with a reliable company, one that is promoting reconditioning air systems for all types of buildings, wanted. Have complete knowledge of layout, estimating and sales promotion. Best of references. Address H-542, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

## SITUATION WANTED

**Situation Wanted**—Have had 28 years experience as tinner and plumber. Am qualified to do repairing and work in the following lines: auto radiator repairing, putting up steel ceilings, pump and windmill repairing, steam and hot water work, installing radios, and any kind of a mechanical job that comes in a shop. Can give good references. Address F. C. Blewett, Dodgeville, Wisconsin. M-541

**Situation Wanted**—By first class tinner and sheet metal worker. Can do plumbing and heating and all kinds of shop work. Address O-541, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

**Situation Wanted**—Experienced tinner and furnace installer wishes steady year around position in southern Minnesota, northern Iowa or near Omaha, Nebraska, or Des Moines, Iowa. Address T-541, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Ill.

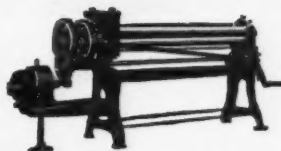
**Situation Wanted**—By mechanical building trades foreman and sheet metal layout man. Indirect and direct steam; fan systems of all kinds including gas and gas fired furnaces; Durham and cast plumbing; first class lead worker. Last three jobs, High School, Auditorium, Government Court House and Post Office. References from inspectors and employers. Age, 41. Best of health and good habits. Good worker and get good results from men. 22 years in the trades. Will take foremanship or journeyman. Good estimator. Would consider working interest on percentage basis with good firm or contractor. Current wages. Will go anywhere. Address S-541, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

## TOOLS AND MACHINERY

For Sale—One Carbic portable acetylene generator, Type CLP 2. Used few weeks. Like new. First check for \$35 takes it. Address C. W. Filby, Jefferson, Ohio. C-542

## PRICED to SELL—READY to SHIP

### Money Back Guarantee



|                                      |          |
|--------------------------------------|----------|
| 30 x 2 Plain Roll.....               | \$ 14.50 |
| 36" Slip Roll—hand power.....        | 22.50    |
| 86" Niagara Foot Shear—like new..... | 195.00   |
| Comb. Crimper & Beader—complete..... | 10.00    |
| No. 10 Kick Press.....               | 27.50    |

NOTE: For Sale—Elbow Manufacturing Equipment Cheap

**INTERSTATE MACHINERY CO.**  
130 SOUTH CLINTON ST. CHICAGO, ILL.

850 Machines at Bargains.  
Send Us Your Inquiries.  
"INTERSTATE HAS IT"



## PREPARE NOW

### For 1932-33, etc.

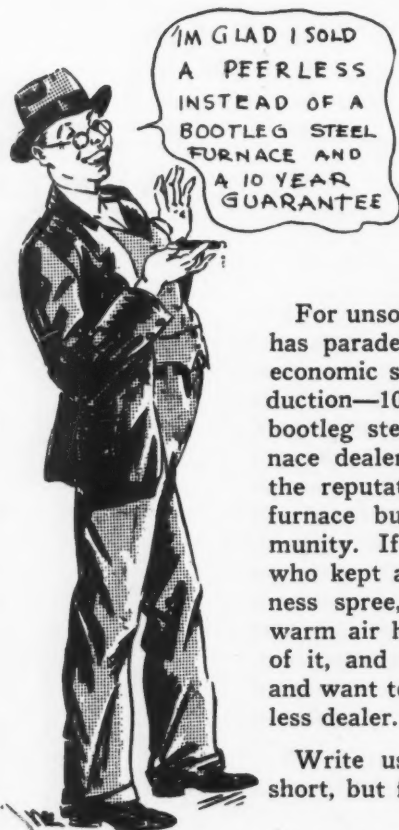
The INSTITUTE is at your Service with specialized Courses of Training, listed below. We have major as well as short courses; all are like private instruction, confidential; moderate in cost, and big in producing results—making money for you. This is our 22nd year, and warrants your perfect trust and confidence in our business and Training methods.

**THIS IS YOUR ONE BIG OPPORTUNITY**  
Enroll for one of our Courses of Training and develop larger opportunities of service, advancement, etc. Check the Course you prefer—write today. Full information is free—no obligation.

- ☐ Sheet Metal Design and Pattern Drafting.
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- ☐ Heating Ventilating Engineering.
- ☐ Special Warm Air and Forced Air Heating.
- ☐ Air Conditioning for Fan H. & V. Eng.
- ☐ Contracting and Estimating.

**THE ST. LOUIS TECHNICAL INSTITUTE** 4543 CLAYTON AVE. ST. LOUIS, MO.

Say you saw it in AMERICAN ARTISAN—Thank you!



## WHO PAYS? THE PRICE!

For unsound enthusiasm. That has paraded at the head of our economic spree selling mass production—10 year guarantees—and bootleg steel furnaces. You furnace dealers are responsible for the reputation of the warm air furnace business in your community. If you are one of those who kept aloof of the past business spree, and sold high class warm air heaters, you are proud of it, and we are proud of you and want to enroll you as a Peerless dealer.

Write us now. Our story is short, but full of profits for you.



### THE PEERLESS FOUNDRY COMPANY

Pioneers in Warm Air Heating Since 1895

INDIANAPOLIS

INDIANA

#### Statement of the Ownership, Management, Circulation, etc., Required by the Act of Congress of August 24, 1912,

of AMERICAN ARTISAN, published bi-weekly, at Chicago, Illinois, for October 1, 1931.

State of Illinois, County of Cook—ss.

Before me, a notary public in and for the state and county aforesaid, personally appeared Etta Cohn, who, having been duly sworn according to law, deposes and says that she is the business manager of AMERICAN ARTISAN and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher—Porter-Spofford-Langtry Corp., 139 N. Clark St., Chicago, Ill.

Editor—Joseph David Wilder, 139 N. Clark St., Chicago, Ill.

Managing Editor—None.

Business Manager—Etta Cohn, 139 N. Clark St., Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one

per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Porter-Spofford-Langtry Corp., 139 N. Clark St., Chicago, Ill.

H. H. Bede, 139 N. Clark St., Chicago, Ill.

J. C. Langtry, 139 N. Clark St., Chicago, Ill.

F. D. Porter, 139 N. Clark St., Chicago, Ill.

C. W. Spofford, 5 S. Wabash Ave., Chicago, Ill.

J. S. Lovingham, 200 Fifth Ave., New York City.

Franklin Butler, 139 N. Clark St., Chicago, Ill.

O. L. Tree, 139 N. Clark St., Chicago, Ill.

3. That the known bondholders, mortgagees, and security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

AMERICAN ARTISAN AND HARDWARE RECORD, INC., Chicago, Ill.

C. W. Spofford, Evanston, Ill.

Frank McElwain, Chicago, Ill.

Etta Cohn, Chicago, Ill.

C. E. Kennedy, Chicago, Ill.

M. M. Dwinell, Chicago, Ill.

J. S. Lovingham, New York City.

4. That the two paragraphs next

above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is ..... (This information is required from daily publications only.)

ETTA COHN,

Business Manager.

Sworn to and subscribed before me this 28th day of September, 1931.

[Seal.]

JESSIE P. BAKKE.

(My commission expires May 26, 1934.)

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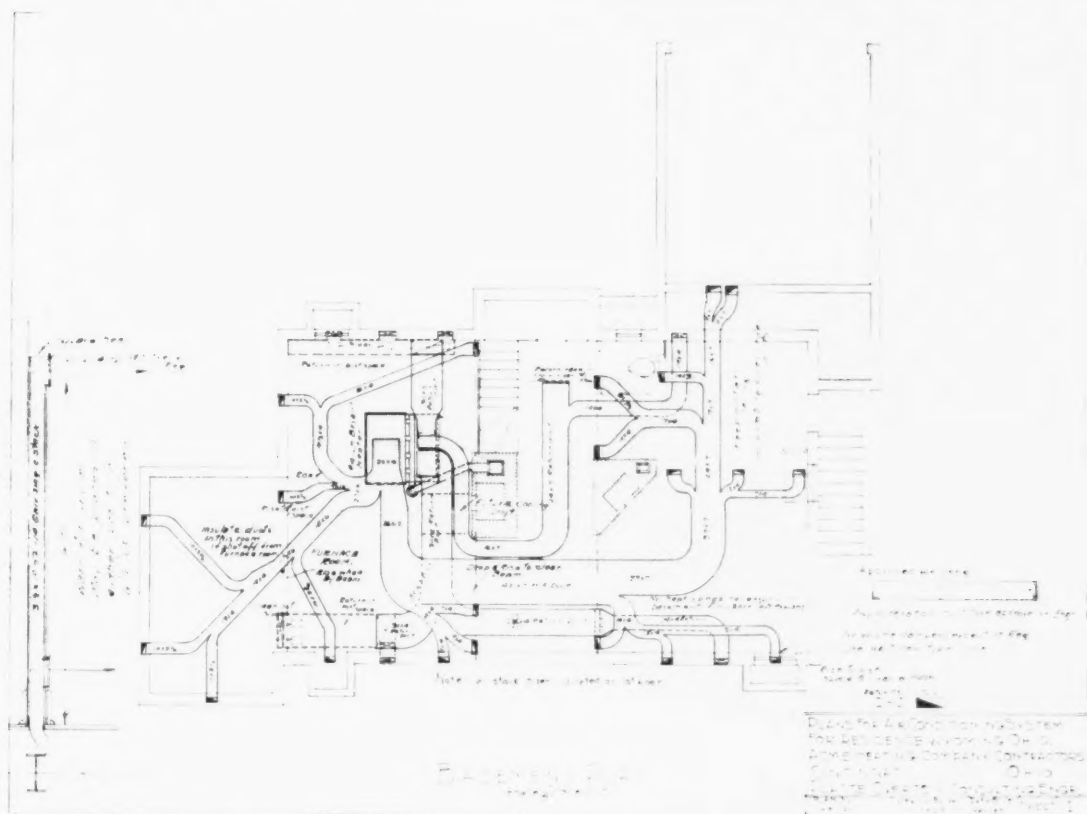


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# Don't GUESS Your Jobs In!

*At the mail order prices I quote, you can afford to have every one of your forced air jobs designed by an experienced consulting engineer. The layout for the two-story house below cost only \$11.45.*



## SCALE OF PRICES

### Plans

#### RESIDENCES

|                             |                 |
|-----------------------------|-----------------|
| Up to and including 5 rooms | \$1.10 per room |
| 5 to 9 rooms inclusive      | \$1.00 per room |
| 10 to 15 rooms inclusive    | \$0.85 per room |
| 16 to 20 rooms inclusive    | \$0.80 per room |
| 21 rooms and over           | \$0.75 per room |

#### CHURCHES

|   |                             |
|---|-----------------------------|
| Up to and including 50,000 cubic feet gross content | \$0.12 per 1,000 cubic feet |
| 50,000 cubic feet and over                          | \$0.10 per cubic foot       |

## SPECIAL NOTE

Where heating systems include filters, washers, temperature control as **EXTRA EQUIPMENT**—add 20 per cent of above prices.

Where filters, washers, temperature controls are **A PART OF THE HEATER AND ARE UNDER ONE CASING**—listed prices apply.

For complete working plans detailing all trunk lines in 1/2-inch scale and showing details of elbows, stacks, branches, sections, cross sections of walls—add 50 per cent to list prices.

Add \$0.01 per square foot of direct radiation for combination systems.

## SPECIAL

*I will check your layouts for \$2.00 a plan!*

## SCALE OF PRICES

### Plans

#### SCHOOLS

|                              |                             |
|------------------------------|-----------------------------|
| 20,000 to 50,000 cubic feet  | \$0.30 per 1,000 cubic feet |
| 50,000 to 70,000 cubic feet  | \$0.25 per 1,000 cubic feet |
| 70,000 to 100,000 cubic feet | \$0.20 per 1,000 cubic feet |
| 100,000 cubic feet and over  | \$0.15 per 1,000 cubic feet |

#### FACTORIES, GARAGES

|                     |  |
|---------------------|--|
| Duct systems        | \$0.12 per 1,000 cu. ft. gross content |
| Unit heater systems | \$0.10 per 1,000 cu. ft. gross content |

# PLATTE OVERTON

*Consulting Engineer*

2100 City Hall Square Building

Chicago, Illinois

# Now you can "cash-in" on the new market for **HUMIDITY**

• • • • •

*We have finally developed a fool-proof  
cold valve that does the work other  
devices have failed to do*

**NO DRIPPING—NO FOULING UP**

*Requires no servicing once the job  
is installed*

Progressive furnace men everywhere are lining up behind the Columbus Humidifier because it is the one humidifying device that has proved itself conclusively. . . . The one and **ONLY** one that uses the now famous compound lever action valve which flushes itself thoroughly and at regular intervals, and therefore *positively will not lime up and cause trouble.*

The Columbus Humidifier is built to stay on the job for years because it is designed right to begin with . . . and because it is built by a firm that expects to remain in business.

There are two models to choose from . . . suitable for any type of warm air heating installation large or small. Installation may be made in one hour's time or less.

*Write to us today for our interesting descriptive literature and full information regarding the profits which are waiting for dealers in many sections of the country. Don't wait for your competitor to get going. . . . Write to us today.*

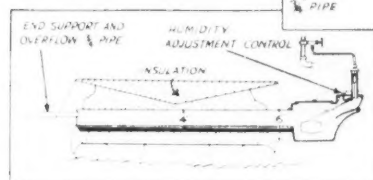
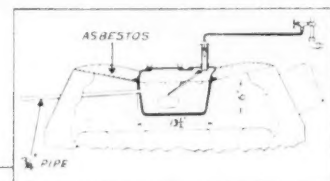


Diagram just above shows the simple manner in which the round model is installed in the burner of the furnace.

Diagram at the left indicates simple method of installing the long model.

# COLUMBUS HUMIDIFIER

Manufactured by **THE COLUMBUS HUMIDIFIER CO.**  
One East Fifth Avenue, Columbus, Ohio